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COURSE OF LECTURES
ON THE
PHYSIOLOGY AND PATHOLOGY OF THE BLOOD,
AND
THE OTHER ANIMAL FLUIDS,

DELIVERED IN THE SESSION OF 1839-40,
AT THE
School of Anatomy adjoining St. George's Hospital.

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LECTURE XII.

The animal secretions: General observations; no satisfactory theory of.—Secretion of urine: chemical qualities of urine; colour; odour; specific gravity.—Urea: its qualities; modes of determining its quantity; contained in blood and urine; its excess; deficiency; consequences of urea accumulating in the blood; uric acid and urates; chemical qualities; modes of obtaining; excess and deficiency in the urine; uric acid diathesis.—General disease from defective secretion in the kidneys: case in illustration.

GENTLEMEN:—Having considered the changes which take place in the lungs, we have now to follow the blood in its course through the various organs and tissues, and to study those secretions and depositions by which it is modified in the capillary vessels, and which uniformly result in the conversion of arterial into venous blood.

If, during the transit of the blood through the lungs, molecular actions are set up, and continue to operate in the course of its circulation by which caloric is extricated, we must qualify the statement I formerly made, that arterial blood reaches the tissues precisely as it leaves the lungs. In this case we must regard it as continually undergoing intrinsic vital operations, which are the only changes that occur until it arrives at the extreme capillary vessels, where those "metamorphoses" take place, from nutrition and secretion, which form the subject of the present lecture.

Microscopical observation has shown that the arteries and veins of the body are continuous through the minute capillary net-work in which the former terminate and the latter commence. The red corpuscles are seen flowing through those vessels, in the smallest of which they follow each other in a single but frequently-interrupted series, when the fluid appears to be colourless; in larger vessels they pass in greater number, when the fluid appears yellow, and it is only when they are accumulated in a considerable number that the blood is red. The motion of the blood is retarded in the capillaries, and it is here, and during its retardation, that the arterial blood becomes venous. It is a most important physiological fact, that the arteries have no other mode of termination than in capillaries leading to veins. There are no blood-vessels in any part of the body which are known to terminate by open extremities. The molecules, therefore, which form the secretions, and furnish the material of nutrition, must necessarily permeate the membranous parietes of the blood-vessels through invisible pores. The red corpuscles never leave the capillary vessels, except in the case of menstruation, and there their structure is deteriorated and broken up; whatever share, therefore, the corpuscles may have in elaborating the liquor sanguinis, the *material* of nutrition and secretion is derived immediately from the latter.

Although the blood moves slower in the capillaries than in the trunks, its rapidity is still very great. Poiseuille and Müller, with many other physiologists, believe that its motion in that part of the circulation is wholly dependent on the action of the heart; it is, however, liable to be modified by various mechanical causes, as position, muscular contraction, pressure, and the like. The corpuscles have been observed to become stagnant in the capillary vessels in cases of great debility.

Physiologists have taken great pains to classify the secretions, but, it must be confessed, with very little attention to utility; the word itself is employed very vaguely; when we see processes grouped together,

differing so widely in all the attendant circumstances, as well as in their results, as for instance, the changes effected in the mixed fluids in the lungs, those effected in the blood and in the fluids absorbed from the alimentary canal in the liver, and in the arterial blood in the kidneys, as *secretions* of carbonic acid, bile, and urine, we are at all events warned to be extremely careful how we generalise our ideas under the term "secretion." There is so little in common between the separation of fluids from serous and mucous membranes, that I doubt much the philosophy of classing them together under one term. It is true that the fluids alluded to are all derived from the blood; but so also is the material of nutrition. It is also true that they are occasionally vicarious of each other, but at the same time they are for the most part unique in their composition, and each is separated from the blood under peculiarities of structure and circumstance which establish their distinct character; they also serve separate ends in the animal economy. For these reasons I shall, in great measure, limit what I have to say respecting secretion, to a detail of some of the leading facts respecting each, considered separately.

A great number of theories has been invented for the purpose of explaining secretion; but, although it has mostly been professed that those theories are established upon the solid basis of facts and experiments, they are, one and all, unsatisfactory. That which appears to me to prevail most at present, attempts to explain secretions on the principle of chemical action produced by nervous power. This theory is mainly supported by the fact that secretions are liable to be altered in quantity and quality by impressions conveyed through the nerves. The most unequivocal instance of this kind, is the effect of mental emotions on secretions; but what says one of our most eminent physiologists, Dr. Bostock? "These facts do not absolutely prove anything respecting the intimate nature of secretion." Dr. W. Philip believed he discovered that when a portion of the par vagum was cut out on both sides of the neck, the secretion of gastric juice was suspended, and the propagation of this as a discovery has had a very great influence of late years over the theory and practice of physic; but Leuret and Lassaigne, who are now quoted by Mayo and others of our own physiologists, have lately repeated and varied his experiments with contrary results. They found that when five or six inches of each nervus vagus of a horse was cut away, and the gullet tied, after the animal had been fed with oats, digestion went on as rapidly as usual; in eight hours one-half of the oats had passed the pylorus; what remained in the stomach was all converted into chyme, and the lacteals were everywhere distended with chyle, the experiment being frequently repeated, and invariably with similar results. Dr. Bostock remarks, "We have numerous instances of secretion in the lower animals where there can be no intervention of nervous influence. This I conceive to be so direct an argument as to be sufficient to counteract the force of any individual facts or experiments, however striking, which may be urged in favour of the contrary opinion." And, further, as remarked by that gentleman, a most unequivocal proof that secretion can be produced apart from nervous influence is furnished by the very experiment of Dr. W. Philip, which shows that a physical agent, such as galvanism, can restore a secretion after the action of a gland has been suspended by an injury done to its nerve. I am well aware that analogies drawn between man and the vegetable kingdom are somewhat remote; yet they are not altogether inapplicable. A cherry-tree in the garden of a friend of mine used to bear a profusion of delicious fruit; of a sudden, and without any obvious cause, it took to secrete an enormous quantity of gum; the branches were loaded with that substance, and for some days together it continued to drop from them in a fluid state, like drops of rain after a shower; this profuse secretion was followed by the death of the tree. Under these circumstances we may fairly discard from the present subject all consideration of the theories which have been advanced to explain secretion; and, as regards the facts, those admit of being arranged under three heads: 1st, Facts which appertain to the relations subsisting between the secretions and the blood from which they are produced; 2ndly, Facts connected with the relations which subsist between the secretions and the organs in which they are produced from the blood; 3rdly, Phenomena of secretion which depend upon impressions conveyed through the nerves to the secreting organ. It is the first series of facts with which we are most concerned in these lectures.

With respect to the various secretions and excretions, a remark formerly made may be here repeated. Chemists have very diligently determined their composition according to existing chemical doctrines; and their elements, and many of their proximate principles, are identical with those which are obtained by analogous processes from the blood; yet we cannot infer that they exist in the living blood in those states of combination in which we know them as chemical compounds. Even the water which forms the greater part of all secretions, may not exist in the blood as water, or it may be that the greater part of the water absorbed so rapidly into the blood retains its binary composition as a material foreign to the true vital fluid, and as such is rapidly cast off by the cutaneous and pulmonary surfaces and by the kidneys, and that a small portion

only gives up its oxygen and hydrogen to become permanent constituents of the living blood. There are some facts which favour this view of the case. For the purpose of comparison, I furnish you with the following, which, if complete, would form the complement to Table X:—

TABLE XIX.

Elementary Composition of various Proximate Principles of the Fluids separated from the Blood.

	Nitr.	Carb.	Hydr.	Oxyg.	
Urea	46.65	19.97	6.65	26.65	Prout.
Uric Acid	33.36	36.11	2.34	28.19	Liebig.
Hippuric Acid	7.33	63.03	5.00	24.63	Ditto.
Cystine	11.85	29.88	5.12	53.15	Prout.
Sugar of Milk	....	40.12	6.76	53.11	Berzelius.
———Urine	....	39.99	6.66	53.33	Prout.
Fat	....	79.00	11.41	9.58	Chevreul.
Butyric Acid	....	62.80	7.01	30.10	Ditto.
Acetic Acid	....	24.48	3.00	24.00	....
Picromel	....	54.00	2.00	44.00	Berzelius.
Wax (Bees')	....	80.60	11.37	7.94	Ure.
Gelatin	16.98	47.88	7.91	27.20	Thenard.

Before I call your attention to particular animal secretions, it will be well to mention one important circumstance in connection with the present state of animal chemistry. There has ever been a difficulty in conceiving how, with three or four elements, combinations should occur in organised bodies equally and perhaps more varied than those which compose the whole mineral kingdom; but in the school of Wöhler, Liebig, Dumas, and their disciples, new views are springing up, by which the present is likely to become an era in organic chemistry: I allude to the discovery of what are called "*compound radicles.*" There is a certain class of compound bodies which possess the property of acting as elements, and of combining with each other, and with the elements of inorganic substances, to form organic principles. The most prominent examples are, perhaps, carbonic-oxide and cyanogen. All organic combinations may be arranged in groups, of which these or similar radicles form the origin. These compounds enjoy all the properties of elementary bodies, and organic matter has thus its own elements. The compound radicles, and not the definitive, are the true elements: thus the definitive elements—the carbon, hydrogen, oxygen, and azote—never appear until all trace of their organic origin has disappeared. This is regarded by many of our continental brethren as "the secret of organic chemistry," and they anticipate from this discovery the most splendid triumphs of science. They look upon it as a key to the knowledge of all the modifications of matter, and to the mysteries of vegetable and animal life. These views are only partially carried out at present, with respect to the proximate principles of some of the secretions, and scarcely at all as regards the blood. Without the same degree of enthusiasm we may still hope for great improvements in physiology and pathology, from this view of the constitution of organic substances.

Secretion of Urine.—One of the most important changes which the arterial blood undergoes is that effected in the kidneys. Carried by the emulgent arteries into the substance of those organs, it is divided into the minutest currents, traverses a convoluted vascular net-work, and is ultimately ramified on the surface of the convoluted and extended *tubuli uriniferi*, where the secretion of urine takes place. Here it is that by an unknown process, perhaps by exosmose, either the fluid part of the blood permeates the parieties of the uriniferous canals, carrying with it certain proximate principles, or particular molecules are separated from the blood, undergo changes in their passage, and form the proximate principles of urine. The blood having thus *parted with* certain elementary or proximate constituents or foreign substances, accumulates again in the emulgent vein, to be returned by a short circuit to the heart and lungs. Calculating the quantity of blood in the system at 30 pounds, and allowing for each ventricular contraction that half a drachm passes from the aorta into each emulgent artery, the whole mass would traverse the renous capillaries in about an hour. It was determined experimentally by Dr. Dalton, that, when the solid and fluid aliment taken into the system is about six pounds daily, the quantity of urine evacuated is about three pounds, or one-half; but this is liable to very extensive variations.

Thus secreted from the blood, the urine in

its healthy state is transparent, of an amber colour, of a peculiar aromatic odour, bitter taste, and acid reaction. Its specific gravity varies from 1.005 to 1.030, but averages about 1.018. Its temperature is about 96°.

TABLE XX.

Composition of Urine, according to Berzelius.

Water	933.00	
Urea	30.10	
Lactic acid	17.14	
Lactate of ammonia		
Osmazome sol. in alcohol		
Extract sol. in water		
Uric acid	1.00	
Mucus	.32	
Sulphate potassa	3.71	
——— soda	3.16	
Phosphate soda	2.94	
Biphosph. ammonia	1.65	
Chloride sodium	4.45	
Muriate ammonia	1.50	
Phosphate lime	1.00	
——— magnesia		
Silica	.03	
	1000.	

Besides the constituents here mentioned, it has been lately found to contain a fatty matter, and one, if not two, colouring principles. Examined microscopically fine scales are observed, which are the debris of the epithelium of the urinary passages.

Comparing the composition of the urine with that of the blood (Tables I, II, and XX), we find many substances in common, and others which are peculiar to each. Their elementary constituents are, however, the same (Tables X and XIX). We know that there is a very close relation between many of the substances which these fluids afford to the analytical chemist, and that both animal and vegetable principles are convertible into each other by comparatively slight causes. Dr. Prout has directed attention to the relations between urea, uric acid, and sugar, and is of opinion that they may be thus converted by the addition or subtraction of single elements of their constituents. When we consider the number and variety of the elements of the blood, and the purposes served by the kidneys in the animal economy, the complicated nature of the urine ceases to be a matter of surprise.

Every circumstance which modifies the quantity, the quality, or the distribution of the blood, is liable to modify the quantity and quality of the urine. This secretion is at its minimum during two hours after a meal; it then augments rapidly during two hours, and continues at its maximum for four hours afterwards. Vegetable food, aqueous drinks, and those which contain carbonic acid, and many other substances, augment its quantity; animal food, and in many individuals alcoholic potations, on the contrary diminish it. Fifty ounces has been calculated as a daily average under vegetable diet, 43 under animal, and 48 from a mixed diet. Magendie relates the case of a man who lived on potatoes for 15 days, and was attacked by a kind of diabetes. The qualities of urine differ according as it has been secreted before, during, and after ureals, and most markedly according to the nature and quantity of the food and drink. The urine voided in consequence of drinking watery fluids was found by Nysten to contain 13 times less urea, of the alkaline salts 16 times, and of the earthy salts and animal matter 5 times less, and much less oily and colouring matter than that passed during digestion. The quantity and quality of the urine is also liable to great variations, according to the temperature of the external atmosphere. In a cold, moist atmosphere the transpiration by the skin being greatly diminished, the quantity of blood in the system would increase to an inconvenient extent, but that the secretion of urine becomes more abundant, and at the same time more watery; when the atmosphere is dry, and warm on the contrary, the secretion of urine is diminished. It has been long thought that the urine of infants is turbid, but Rayer asserts that in infants at the breast it is colourless and limpid as water, without alkaline or acid reaction, and with very little of a urinous odour; it contains very little urea, and does not become turbid sooner than that of adults.

Various substances, particularly salts and many colouring principles, received into the blood, and being foreign to that fluid, are rapidly separated from it in the kidneys. Notwithstanding the protection there is against the reception of prejudicial materials into the blood, by the selection we make of food and drink, and by the functions of the digestive canal, it is well known that substances injurious to the economy are frequently received from without; or wholesome materials may be assimilated in too large a quantity. So also in the molecular changes which are continually going on in the more solid structures, effete particles are re-absorbed by the blood. The blood could not maintain its normal vital properties if those materials were not rapidly separated from it. Water in excess, or its elements, is separated by exhalation from the lungs and skin, and through the kidneys. Nitrogen and mineral substances are most frequently expelled with the urine, carbon by the lungs, carbon and hydrogen by the liver. It is important to note the time which is required for various substances to be received into the blood and again excreted. Watery fluids are absorbed gradually, but rapidly, from the alimentary canal, by the radicles of the vena portæ; are carried directly into the circulating torrent, and are rapidly separated by the skin and kidneys, which in this respect are to a great extent vicarious of each other. Prussiate of potash has been detected in the

urine from two to ten minutes after its introduction into the stomach. In a case of *inversio vesicæ* substances introduced into the stomach were detected in the urine in from 15 to 75 minutes; their excretion took place in greatest quantity in from 1 to 2 hours, and they ceased to be perceptible in from 4½ to 11 hours; the pulp of cassia was not detected till a lapse of 55 minutes, and did not cease to be perceptible in the urine for 24 hours. Thus the kidneys separate, molecule by molecule, substances from the blood which by their accumulation would prove injurious or poisonous to the animal economy. Many of those substances which are found in the urine are also detected in the blood, but, paying due attention to these facts, we can readily comprehend how things found in the urine are not always found in the blood, as happens occasionally with virulent poisons. An individual partook for several months of sorrel; the salt of *oxalic acid* did not accumulate in the blood, but an oxalate of lime calculus was found in the bladder. Thus the office of the kidneys is to relieve the blood of a superabundance of water, to carry out of the blood superfluous saline, oily, and colouring matters, and, as we shall presently see, particularly to separate from the blood effete animal matters derived from the more solid structures of the body.

When the kidneys cease to perform their important functions the blood becomes diseased. When the blood becomes diseased, from any cause whatever, the kidneys are liable to suffer. Sometimes, from long-continued vitiated states of the blood, or from sudden violent changes, by which the action of the kidneys is increased, organic disease is set up in those organs, and although the original morbid condition of the blood has passed away, a new affection, in consequence of the cessation of the kidneys to perform their functions, is set up in the blood, and destroys the patient. If one kidney be extirpated from an animal the other performs the function of both, and frequently enlarges, the animal experiencing little or no inconvenience. This happens as a consequence of disease also in the human subject. It is frequently not until too little remains of the organ to perform its office as respects the blood, that the system suffers. This accords with those laws of compensation that are continually in operation. A lady under my own observation died comatose after a state of ill health, of four years' duration, in which it was not obvious what organ was diseased; on *post-mortem* examination one kidney was gone and the other atrophied to an extreme degree; this was the only morbid appearance. The same disease is frequently observed in both kidneys, because they are equally exposed to the same morbid conditions of the blood. The influence of cold and moisture on the blood produces albuminous urine alike from both kidneys.

Colour of Urine.—The colouring principles are almost always combined with urea and the urates, and when the latter are in excess the former are generally in excess also, but exceptions are occasionally met with. The urine is frequently coloured by substances taken into the blood, from the alimentary canal. Indigo for instance gives it a greenish tint. The colour of rhubarb is observed in from 10 to 15 minutes after it has been taken. Variations of colour in diseases are very extensive. It may be transparent and colourless; white or lactescent, from excess of oily matter; it may assume various shades of yellow and of red; or it may be brown or black, the latter being most frequently produced by the addition of the corpuscles or of the colouring matter of the blood. The yellow tint, which is rendered green by the addition of hydrochloric acid, indicative of jaundice and other biliary affections, is familiar to every one, and the same may be observed of the high-coloured urine in inflammatory affections. Since an increase of temperature is almost always attended with the latter effect, redness of the urine was formerly regarded as one of the *effects* of febrile heat. The yellow, red, and pink tints of the amorphous sediments which occur in dyspepsia, inflammatory fever, and irritative fever, respectively, are undoubtedly connected with states of the blood, but at present they have been very little studied in their relations to the vital fluid.

Odour.—That odorous principles are taken into the blood and separated from it in the kidneys, is obvious from the well-known effects of turpentine, asparagus, and many substances of a volatile nature. Opium, assafœtida, and saffron will communicate both colour and odour to the urine. The natural odour of urine is liable to changes that are referrible to the blood, or to the condition of the kidneys and urinary passages.

Specific Gravity of Urine.—The variations which occur in the density of this fluid are proofs that its solid and watery constituents are liable to great differences in proportion. In health it varies greatly at different times of the day, depending on the periods at which new matter is received into the blood by the thoracic duct, and on the absorption of watery fluids by the radicles of the vena portæ. Greater differences still in the specific gravity of urine are observed in diseases. It is very heavy in diabetes mellitus and, on the contrary, light in diabetes insipidus, and that the state of the urine in these affections depends upon conditions of the blood, known or unknown, is evident from the absence of organic disease of the kidneys, and from the fact that the blood has been known to yield morbid principles during their progress. The instance in which urine had the lowest density in M. Rayer's observations, was one of *polydipsia*, being 1.001

The heaviest was in a case of diabetes, being 1.040.

Urea is an inodorous, colourless, crystalline solid, of a slight pearly lustre, and has commonly the form of a four-sided prism. It is soluble in rather less than its own weight of water, at 60°, and in an unlimited quantity in boiling water. Acohol, at .816, dissolves a fifth of its weight at 60° Fahr., and nearly its own weight by boiling. It is nearly insoluble in æther. The caustic alkalies decompose it, and resolve it into carbonate of ammonia, and with nitric and oxalic acids it forms nearly insoluble salts. By comparing Tables X and XIX, you will find that it contains more azote than any other animal product. It contains 30 per cent. more azote, and a great deficiency of carbon as compared with the blood; so that the separation of azote by the kidneys from the vital fluid is one of the most unequivocal facts in animal chemistry. The proportion of urea in the urine is liable to great variation both in health and disease, and we obtain important information respecting the state of the animal economy by a knowledge of the quantity of that principle which is separating from the blood; the quantity of urea in urine cannot be determined by its colour, since high-coloured urine may have a deficiency, and that which is pale an excess. The following is the plan laid down by chemists to separate urea, and to determine its quantity:—

Evaporate fresh urine to the consistence of a thick syrup; add to it gradually, when quite cold, pure concentrated nitric acid, until the whole mass becomes solid; wash this with ice-cold water, and dry it with bibulous paper; dissolve the crystals of nitrate of urea thus obtained in lukewarm distilled water; add carbonate of barytes for the purpose of decomposition; evaporate this mixture to dryness, and boil the dry mass in alcohol; crystals of urea may now be obtained from the alcoholic solution by spontaneous evaporation. When urea occurs in great excess the fact may be determined by persons a little accustomed to such experiments, according to a plan recommended by Dr. Prout. Put a small quantity of urine into a watch-glass, and add carefully an equal quantity of nitric acid, so that the acid may sink by its gravity to the bottom of the glass, and the urine swim upon it; if there be an excess of urea, crystallisation will take place immediately.

Excess of urea has been found in the urine in cases of diabetes insipidus; in one instance 7¼ ounces, being nearly three times as much us usual, were evacuated daily. According to Dr. Prout, when the urine of infants deposits phosphates it frequently contains an excess of this principle. This has been found to be the case also in rheumatism; but, upon the whole, Rayer states that the instances in which urea is found in excess are rare; while those in which it occurs in diminished quantity are common, owing as much, perhaps, to abstinence or low diet, as to the disease itself. The urine, besides being colourless, frequently contains very little urea in nervous affections. In diabetes mellitus that principle is replaced by sugar, and in diabetes insipidus it is sometimes replaced by a substance resembling osmazome, soluble in alcohol. In anasarca albumen takes the place of urea, and the urine is then coagulable, and the same thing has been observed in chronic inflammation of the liver, with constant dyspepsia, and towards the termination of diseases producing emaciation. These and other abnormal characters of the urine are important in reference to the urinary organs and to the blood. In the healthy state urea can rarely be detected in the blood, but it is now satisfactorily determined, by the experiments of Prevost, Dumas, Segalas, Mitscherlich, Gmelin, and Tiedemann, that it exists in the blood when it is not separated in due quantity by the kidneys. Dr. Busk has lately stated, that availing himself of a property possessed by urea of altering the forms of the crystals of certain salts, he has been able by microscopic inspection to convince himself, of the presence of urea in healthy human blood. When both kidneys are extirpated from an animal, urea rapidly accumulates, and can be extracted in large quantities from the blood. When the kidneys are so diseased that urea is not separated in the usual quantity, it accumulates in the blood, and produces ulterior, and frequently fatal effects. Nysten found urea in the matter vomited, and in different effused fluids, in a case of ischuria. Christison, Rees, and Rayer have found urea in the blood in cases of dropsy with coagulable urine.

Urea has been regarded as a useless product of digestion derived from the blood; but its origin, and more particularly that of the azote of which it is composed, is most likely in the change of material continually going on in the body. This is rendered probable by its being found in the urine of reptiles which have fasted for months: it was obtained from the urine of a madman who had fasted 18 days. The reason of urea not being detected in the blood in a state of health is, that in a state of health the kidneys excrete it as soon as formed.

What is the consequence of blood being poisoned as it were with urea? Or, in another point of view, of blood having an excess of azote? In experiments on animals, where both kidneys were extirpated, the following symptoms ensued:—On the third day, brown, fluid, very copious evacuations from the intestines, and by vomiting; fever, temp. 110°, sometimes however depressed to 92°; pulse small, quick, 200° in a minute; breathing frequent and short, and at last laboured; death between the fifth and ninth day. In Mayer's experiments, death in from 10 to 30

hours, preceded by tremblings and convulsions. Effusion of clear serum is found in the brain, the bronchi full of mucus, the liver inflamed, intestinal canal full of fluid fæces coloured with bile, and the bladder contracted. The blood of the animals experimented upon was more watery than usual, and contained urea. Five ounces of the blood of a dog, which lived two days after the removal of the kidneys, afforded more than 20 grains. Two ounces of cat's blood yielded 10 grains. In the human subject urea has not only been found in the blood, but in the fluids effused in the serous cavities. The ancients record many cases of urinous vomiting and sweats, which are confirmed by these discoveries of the moderns. It would appear that as this substance ceases to be separated in the kidneys, its gradual accumulation in the blood is frequently prevented by a vicarious discharge from distant organs; failing this, as I have said, the blood becomes poisoned. Diseases of the kidneys, accompanied with a diminution, cessation or vitiation of the secretion of urine, give rise to the most serious cerebral affections, to complaints in the alimentary canal and liver, and to violent affections of the respiratory organs. When both kidneys are affected with nephritis or pyelitis, it is not uncommon to meet with comatose symptoms, sometimes epileptic attacks, and other symptoms which attend acute hydrocephalus or meningitis. Sometimes, also, a typhoid state occurs, with black, dry, and fuliginous tongue. Although there can be no doubt that urea plays an important part in these cases, we must not forget the *numerous* substances in the urinary secretion which are all derived from the blood, nor attribute the whole of the effects to the urea. It has been shown by experiment, that after the extraction of the kidneys the blood undergoes other modifications; it is more serous, and it furnishes more of the animal extractives coming under the terms osmazome and lactic acid. (Table I.)

Uric or Lithic Acid and Urate of Ammonia.—Uric acid is another of the azotized principles of urine, in which fluid it occurs in combination with ammonia. The saline compound does not appear in Berzelius's statement of the constituents of urine; the reason is, that he believes it to be formed after urine is abandoned to itself. Dr. Prout, on the contrary, is of opinion that it exists ready formed, and that it is the principal element of the pulverulent sediments of acid urine, particularly in health. Uric acid in a pure state is in white, tasteless, inodorous crystals, insoluble in alcohol, and requiring 10,000 parts of water, at 60°, for solution; it is soluble in solution of potassa, and separable by an acid, in a granular and colourless state. To procure it separately a few drops of strong hydrochloric acid should be added to urine, when, after some hours, a reddish precipitate of uric acid takes place, the tint being attributable to the addition of colouring matter. In order to procure it colourless it may be dissolved in caustic potassa, and again precipitated. Woehler and Liebig regard uric acid as a compound of urea with a substance formed of the compound radicles, cyanogen and carbonic oxide.

Urate of ammonia is very soluble in boiling, but much less so in cold water; soluble in solutions of alkaline carbonates; reacts in the same manner as lithic acid with nitric acid; crepitates strongly when suddenly heated on platina foil, and yields vapours of ammonia when heated with potassa. It is an important practical point to distinguish amorphous sediments of lithate of ammonia from those composed of phosphate of lime. When urine becomes very thick on cooling, and recovers its transparency by the addition of water and by heat, it contains an excess of the former. The latter dissolves completely in nitric acid diluted eight times, while the former gives a precipitate of crystallised uric acid. In acute rheumatism and other inflammatory diseases the urine sometimes deposits a sediment of urate of ammonia which had existed with a quantity of albumen; in this case, on applying heat it first becomes transparent by the solution of the urate, and subsequently turbid by the coagulation of the albumen.

That uric acid is not in a free state in urine is shown by its comparative insolubility. The addition of any of the acids precipitate it. It is never secreted normally in a free state, but besides lithate of ammonia it is frequently combined with soda, potassa, or lime. The pulverulent sediments of acid urine are almost always composed of urate of ammonia, but the free acid in a crystalline state is met with in diseases, particularly in gravel and gout. The proportion of uric acid which the urine furnishes is variable even in health, according to the properties of the food and drink. Animal food increases, and vegetable food diminishes it. But that the presence of uric acid does not depend entirely on the nature of the food is determined by the fact, that in many animals which live entirely on vegetables, it is found in abundance in the urine. It is extremely liable to occur in *excess* in various states of derangement of health, particularly in the lithic acid diathesis; and this excess indicates a corresponding morbid condition of the blood. A slight dyspepsia from errors of diet increases the uric acid deposits in the urine, but much more readily in some constitutions than in others. It is in gout, of all other diseases, that uric acid is found most constantly in excess in the urine, and the abundance of this principle or its elements in the blood of gouty habits is shown by the concretions formed in the joints, composed of

urate of soda and urate of lime, and the perspiration in gouty habits and in those affected with calculous affections has been found to contain uric acid. In rheumatic and arthritic nephritis, in acute articular rheumatism, in calculous complaints, peritonitis, pneumonia, scarlatina, in the last stage of intermittents, and in the crisis of fevers, the kidneys being affected or not, the high-coloured urine affords an abundance of uric acid and of urates. According to M. Rayer the great excess observed in acute rheumatism occurs only during the height of the fever, and diminishes after abundant bleeding; but even after this, and the use of diluent drinks, and total abstinence, he found a considerable sediment of minute crystals, and amorphous matter of uric acid, deposited with a considerable quantity of mucus. During the use of colchicum in gout it has been observed that the uric acid, simple or combined, increased in the urine from 69 to 112 parts in the 1000. The deep red-coloured urinary deposits in the last stage of intermittents and in the crisis of fevers have an unusually large quantity of uric acid, independently of any nourishment received into the system. In maladies which are attended with a deficiency of urea there is usually a *deficiency* also of uric acid. As in hysteria, and during the febrile state which accompanies the paroxysm of gout, and in the earlier stages of many fevers, a deficiency of uric acid is found in the urine, as if the secretion of that principle from the blood were suspended. M. Rayer quotes a case of cancer of the pylorus in which the urine contained no uric acid, although there was an abundance of urea.

Viewing the kidneys as organs through which the blood is depurated, any obstruction or disease which interrupts their functions, as before remarked, cannot fail to vitiate the whole mass of blood; hence we find diseases of the kidneys give rise to affections of the digestive organs. The frequency of diarrhœa in "albuminous nephritis" is a familiar example. The extraordinary appetite and thirst in diabetes mellitus may be regarded as a consequence of the excess of urinary secretion, and of the morbid state of the blood and urine. In the last stage of the same disease, bronchitis is almost constant, and most diabetic patients die phthisical. Rayer states that in chronic inflammation of the kidneys with purulent secretion, pleurisy and pneumonia frequently occur as "intercurrent diseases." When the secretion of urine is suppressed the functions of the lungs become pressing, the respiration is hurried, and the air expired has frequently the peculiar odour of this secretion. Vomiting of matters with an urinous odour occasionally occurs as a consequence of accidental retention of urine. The various changes which take place in the blood in fever and inflammation, although little understood, may in a manner be predicated by the state of the urine. Urine secreted during the existence of inflammation was found to contain three times more urea and a much larger quantity of soluble salts than the urine of digestion, with a considerable quantity of albumen. In the cold stage of fever the exhalation from the skin is diminished and the urine becomes watery; in the next stage the urine becomes scanty and dark-coloured. As fever advances Rayer states that urine shows an increase in the quantity of albumen; as fever declines a free acid reappears, and the uric acid deposits are thrown down. In periodical fevers the same circumstances occur in each paroxysm.

The following case, which is extremely interesting, and illustrates many points adverted to in this lecture, occurred to Dr. Wilson, many years ago:—Mrs. H., a pretty, blooming woman, became affected with general anasarca, the legs and body much swollen, tongue red, urine scanty at times, but with no local kidney symptoms. The chest symptoms were extremely urgent, with occasional severe spasmodic attacks, the lips blue, and face pale or flushed, the cough and dyspnœa were at times so urgent as to invite the question, "Is the pericardium adherent?" The anasarca was relieved from time to time by spontaneous vomiting and purging, proving, in the words of Dr. Wilson, in his MS. notes of the case, while in progress, a necessity for the expulsion of offensive and pernicious principles from the system, and implying, in his belief, a want of glandular secretion, or, in other words, an altered, and therefore pernicious state of the blood, obliging an effort by the system to discharge its bad principles. Thus, from the vomiting and purging, we may infer disease of some of the excretory glands, probably of the kidneys, seeing that a great effort is made by the bowels to do the work of the kidneys. The case terminated fatally, after an illness of many months, by drain and exhaustion, as it seemed from the increased frequency of the attacks of vomiting and purging.

Post Mortem.—The body was rather fat; lungs and heart healthy; no effusion in chest; liver large, nutmeg; hepatic veins large; kidneys large, pale, smooth on surface, very empty of blood; cortical structure almost entirely superseded by a smooth, homogeneous material of sizy appearance; bladder empty.

This case illustrates the effect on distant organs, and on the whole animal economy, when the blood has been vitiated by a failure of the kidneys to perform their appointed function; but a most important and eminently practical observation made by Dr. Wilson, and frequently put forward by him in this room, was on "the exaggerated effects of even the mildest medicines in this and anala-

gous cases of diseased excretory glands, small doses of nitre or acetate of potash appearing to produce the most violent effects. Indeed, such medicines failing in their diuretic effect, and remaining in the system, act as poisons of the entire blood, and become positively dangerous. The physician, in these cases, after ringing the changes on such medicines, is completely baffled." How important is this observation in a physiological and therapeutical point of view, and in connection with the facts just now before us, how intensely interesting!

A LECTURE
ON
MONSTROSITIES,

DELIVERED AT THE MIDDLESEX HOSPITAL SCHOOL OF MEDICINE,

FEB. 22, 1840.

BY JOHN NORTH, ESQ., F.S.L.,

Lecturer on Midwifery and the Diseases of Women and Children.

GENTLEMEN:—In resuming the subject of anomalies of structure, I shall first speak of the congenital softness of parts which are naturally hard.

The bones are the only organs in man or animals in which a deficiency of hardness is found. You know that all parts of the osseous system are originally soft membranes; that those membranes, in the second stage of development, become cartilaginous; and, finally, that this cartilaginous state is converted into bone. Bone in man, as well as in animals, is, generally speaking, formed in the latter parts of intra-uterine life. It follows, then, as a necessary consequence, that if those parts which ought ultimately to become bones, are retarded or arrested in their development, either the membranous or the cartilaginous condition may remain longer than usual, or even remain permanent through life. Whether these will retain a membranous or a cartilaginous condition, must depend on the period of intra-uterine life at which the arrest or retardation of development occurs. Either circumstance may take place in several bones, but usually it occurs only in one, or a portion of one bone. The bones of a child's head, for example, have not unfrequently been found arrested in their development, in consequence of pressure. In some remarkable cases such pressure has been inflicted by exostosis, or a preternatural growth of the pelvic bones of the mother. These examples are remarkable, inasmuch as they realise, in the species in which they are observed, the normal condition of other species belonging to classes beneath them in the zoologic scale.*

Anomalies arising from an induration of parts which are naturally soft, are attributable to an excess of development. Nearly all the soft parts have been found osseous, but usually as the result of disease. Individuals are occasionally seen, the whole surface of whose bodies, instead of being covered with skin, is covered with scales resembling those of a fish. Such persons have been called porcupine families. This condition constitutes a species of disease, of which there are several varieties, termed *ichthyosis*.

There are various anomalies in the situation of parts, which arrest attention from their practical importance; they can only be explained by the theory of eccentric development. Those organs are most liable to anomalous changes of position, which, in the early periods of fœtal life especially, are but slightly united to the adjoining parts. Displacement of the brain is by no means uncommon, constituting *hernia cerebri* or *encephalocele*. The brain may protrude at all the sutures, and between those portions of bone, the union of which takes place at so early a period of embryonic life that their primitive separation has only recently been known. For example, the brain may protrude between the two portions of the occipital bone, which ought to become permanently united. St. Hilaire mentions, that in one case a large portion of the brain protruded between the two halves of the occipital bone, which remained severed in consequence of an arrest of development; it was mistaken for a common tumour, and was removed by a surgeon. The child died in a few hours after the performance of this ill-judged operation. Such children usually die soon after birth. Displacement of other parts not unfrequently occurs; for instance, of the lungs and the heart. The heart has been known to protrude through the parietes of the thorax. Most of these children are incapable of living, but a few have lived for many months. The digestive organs are frequently displaced, as well as the heart. Sometimes the diaphragm has been perforated, so as to admit the abdominal viscera into the thorax. Exomphalos, or umbilical hernia, may occasionally arise after birth, in consequence of the digestive viscera being pressed against the recently-formed and tender navel; but generally exomphalos is a primitive malformation, and the part protruded a portion of the small intestines; but sometimes a part of the omentum, or

* Otto, "Lehrb. der Path. Anat." mentions a very remarkable example of this kind. A woman, who had exostosis of the pelvis, gave birth to four children, in each of whom a small part of the cranium was depressed and not ossified.

large intestines, or the liver, protrudes, in consequence of the abdominal parietes being deficient. The whole of these anomalies arise from the persistence of a fœtal condition. You are aware, from observations I formerly made when upon the subject of embryology, that till about the third month of utero-gestation the intestines are collected together, and lie outside the abdominal cavity. They form a mass inclosed in the sheath of the funis, which, at that time, is very large; and which, at that early period of embryonic life, is the substitute for the yet unformed abdominal parietes. When the abdominal parietes are almost entirely formed, there is scarcely any opening left but that at the umbilicus, through which a portion of the intestine may obtrude. The majority of children, if born alive with umbilical hernia, die a short time after birth. Occasionally, where the hernia is very small, and unconnected with other malformations, the child, if properly managed, may continue to live and enjoy tolerable health. Various internal displacements of the digestive organs are occasionally found, many of which are not otherwise important than as showing that they are almost always the result of the persistence of some stage of embryonic life.

An anomalous position of the urinary and genital organs is not very uncommon, the bladder may protrude through an opening at the pubis, or the recti muscles on either side; its displacement through the pubis is not unfrequent; the bladder does not quite protrude, but looks like a subcutaneous tumour more or less above the pubis; this is called *extroversion* of the bladder. The bladder is not merely displaced, but its development is arrested, its mucous membrane is turned out, and it is this which gives it the appearance of a reddish, soft, tumour, opposite the symphisis pubis, or a little above it; at the upper portion of the tumour are generally found two small apertures, which are the openings of the ureters; through these openings the urine distils *guttatim*. It so happened that the first case I ever dissected presented a malformation of this kind; and here [presenting it] is a drawing of it taken at the time:—The anterior portion of the bladder is wholly wanting. The tumour, in these cases, projects more or less, and may be diminished by pressure; so long as the child is quiet the tumour is little, if at all, above the surface of the abdominal integuments; but when the child cries or strains, it is considerably elevated above them. In several cases where there has been this extroversion of the bladder, the umbilicus has been entirely hidden by the tumour, or has, perhaps, been lying under the protruded portion of the bladder; and hence it has been thought that certain children have been born without a navel, an occurrence which is physiologically incredible. As the urine is distilled *guttatim*, through the orifices of the ureters, which are represented in the drawing, the function of the urethra is not called into action; and according to a physiological law the urethra becomes impervious. The same remark applies to all canals, whether blood-vessels or any other tubes; if they are not called upon by nature to perform their function of transmitting the fluid that should naturally pass through, then they cease to be canals. The opening at the pubis or recti muscles, which is found in cases of extroversion of the bladder, is clearly and unequivocally an arrest of development; Nature has stopped in her work; in fact, the development is not completed.

Extroversion of the bladder is always a serious malformation, for the discharge of urine is involuntary, and constantly going on from the ureters.

An anomalous situation of the testicles is neither uncommon nor practically unimportant. The testicles may descend sooner than usual, from an excess of development, Nature having terminated her processes more rapidly than she generally does; more frequently, however, the testicles do not descend into the scrotum at the usual time, from an arrest of development; they may not descend till the ninth month of pregnancy, or even for weeks, months, or years, after birth, or they may never descend at all. They are often arrested at the inguinal canal for several years. In all these cases there is a persistance of the fœtal condition, and the situation of the testicles is analogous to the natural structure of various animals, in many of which the testicles remain permanently in the abdomen. None of these cases affect the generative powers of man; indeed, the popular belief is, that men whose testicles do not descend into the scrotum, are generatively more vigorous than those whose testicles are in their natural situation. If the testicles remain permanently in the abdomen, no external examination could convince the inquirer that those organs existed at all; and no doubt it is to this circumstance that we must refer those cases in which it has been imagined that men were capable of exercising their generative functions without testicles. Cases of anomalous situation of the testicles have occurred which are extremely important; at the age of puberty the testicles have appeared in the form of small tumours at the groins, and serious mistakes have arisen. If, at the age of puberty or before, a boy complains of a small swelling in the groin, be careful before you make up your mind as to the nature of the case or the treatment to be adopted; examine the scrotum, and ascertain whether the testicles are down. I have known cases in which the testicles forming tumours at the inguinal ring, have been mistaken for hernia; a truss has been applied, and inflammation and great suffering have been produced by the

ignorance or carelessness of the practitioner. I shall afterwards enter into some details upon this subject.

Displacement of the kidneys is by no means a rare species of anomalous position of parts; one kidney is occasionally found, not in its natural situation, but in the pelvis. This is worth observing, because it refutes a physiological error. In cases of this kind the supra-renal capsule is retained in its natural situation, showing that the opinion of certain physiologists, who assert that the supra-renal capsule and the kidney are dependent upon each other, is incorrect; for when the kidney is in the pelvis, the supra-renal capsule retains its normal situation, condition, and size.

There are various displacements of organs which are not contained in the digestive cavities; for example, club-feet. Club-foot is, however, very frequently associated with other malformations. In 38 cases of anomalous structure, at La Maternité, of various kinds, Chaussier observed club-foot in 37 of them. This malformation may exist alone, but usually it is associated with other and more important organic deviations. Generally speaking, we see club-foot in acephalous children, *i. e.*, monsters born without a brain, or merely a rudimentary brain.

Club-foot frequently arises from mechanical pressure inflicted during pregnancy, but generally there is an imperfect development of the bones of the tarsus; it also occurs from rickets during intra-uterine life. When the foot is turned in, which is the most common species of club-foot, it arises from a persistance of the fœtal condition, for at an early period of embryonic life the foot is turned more or less inwards. Here we find another proof of the curious fact, that anomalous structure in man represents the natural structure of a great many animals. Sometimes the foot is thrown downwards, (the pes equinus, of authors) another example of arrest of development occurring at a very early period of intra-uterine life, and again exhibiting in man the natural structure of many animals. Many mammiferous animals have their feet directed vertically downwards, and only rest in standing on their toes and nails. Similar distortions are occasionally seen in the hands.

The hair of the eyelashes is sometimes turned in at birth, constituting what is termed *trichiasis*, which occasionally occurs also after birth. The hairs being turned in on the globe of the eye, of course cause great irritation. It is not my object to speak of the treatment of these cases.

The blood-vessels, nerves, and muscles are subject to various anomalies of position. It is almost impossible to dissect a body without finding variations in the origin and termination of muscles, and in the course and distribution of blood-vessels. The latter are extremely common, some of these variations being of no moment, while others are very important in reference to practical surgery. The surgeon, when about to perform an operation, presumes that the blood-vessels to be involved in it are in their natural position; but he should know the possibility of this not being the case, and therefore will be careful to make an examination, and prepare for any accident which may arise from their abnormal situation.

All organs, however intimately connected with adjoining parts, may be displaced at birth, and most of these occurrences are explained by an arrest of development, so that that becomes a permanent condition which, normally, should be only temporary. Sometimes in exomphalos, or congenital umbilical hernia, the organs have not quitted their natural position,—they have never occupied it. The protruded part or parts have not escaped from the abdomen, as is generally asserted; congenital umbilical hernia is generally formed in a different way; from an arrest of development the protruded parts have never arrived in the abdominal cavity. Sometimes, however, this species of hernia occurs after birth, the intestine having protruded from its natural place, and passed through a more or less dilated opening, or an opening which remains beyond the usual period.

The jaws are sometimes so narrow that the dental arch is incapable of holding all the teeth it is naturally destined to contain. This is not of practical importance; it is merely one item in the general account, illustrating the curious physiological fact of anomalous structure in man so frequently resembling the normal structure of animals; for in many animals we find the teeth standing one before another, from narrowness of the jaw. Another singular anomaly with respect to the teeth is, that they are sometimes merely fixed in the gums, resembling many fish, where they are not fixed in bony alveolar processes, but simply adhere to the soft parts. This supports the opinion of de Blainville and other physiologists, who assert that the teeth are dependent on the integuments rather than on a connection with the osseous system.

The whole of the lymphatic system is so uncertain in its distribution, that no detail has ever been attempted of it. Less commonly, but still not very rarely, we find similar variations in the distribution of the arteries and veins. The vena azygos, for example, varies so greatly in its course as to be scarcely twice alike. The jugular veins, again, are by no means constant in their course. The system of the vena portæ offers many variations in its distribution. The arch of the aorta and the vessels which arise from it often vary in their direction. Numerous other deviations exist occasionally

in the distribution of blood-vessels in the human subject.

The knowledge of some of these facts is of practical importance. For example, neither the distribution of the veins nor the arteries at the bend of the arm is always the same. The common operation of venesection is generally performed upon the median cephalic vein. If the median basilic vein is chosen, the artery may be wounded. And the lancet ought never to be introduced before the situation of the artery is ascertained; for the division of the brachial artery into the radial and ulnar sometimes takes place much higher up than usual. Sometimes the brachial artery divides at the upper part of the arm, and then the branches which proceed from it correspond with the basilic and cephalic veins. Portal observes, that where there is this unusual bifurcation of the brachial artery, it is generally associated with a similar high division of the crural artery.* Again, the obturator artery generally arises from the hypogastric, or internal iliac artery; but not unfrequently it is given off by the epigastric artery. This is an irregularity in the distribution of blood-vessels of importance in reference to the operation for hernia.

Sometimes the ureters open into the urethra, and in such cases the bladder is generally absent. This is the natural structure of many animals. The ureters may open into the vagina or rectum. The vas deferens may open into the bladder or ureters. The vagina, or neck of the uterus, has been known to open into the bladder or rectum. In the latter case a woman may conceive and bear children. The anus has been known to enlarge sufficiently, with some laceration of the perinæum, to admit the passage of the child during labour. In one case related by Portal, a woman had apparently no vagina, but only a small opening for the passage of the urine, and she had always menstruated by the anus. She was impregnated by the rectum, and at the end of pregnancy the very small opening near the pubis, by means of which it was impossible she could have been impregnated, enlarged, and delivery took place by the natural passage. The intestinal canal has very frequently been known to open at some other part than the anus. In those cases there is a deficiency of the intestine, the gut ending where the anomalous opening is. This is important, as I shall afterwards mention, in reference to the treatment of imperforate anus.

Irregular openings of the male urethra are by no means uncommon. I have seen three instances. Sometimes it opens at the upper part of the penis, constituting a species of malformation technically termed *epispadias*; at other times the opening is on the lower part of the penis, constituting another species of malformation, called *hypospadias*.

Occasionally, some of the natural openings of the urinary organs are found wanting. Most of these anomalies arise from a persistance of the early structure of the embryo, and represent in man the natural state of inferior animals. The intestines have been known to terminate in the bladder. The expulsion of the urine, mixed with meconium, is a clear proof of that phenomenon. In most cases death is the result of these malformations, but sometimes infants have lived for months with them. A remarkable case occurred to Fournier, of the rectum opening into the vagina. He was called in by three pupils, who had been attending a woman in labour for three days. Difficulties arose; the bowels were much constipated, and the patient had not had a motion for some time. He desired a glyster to be thrown up; the pupils attempted to administer it, but failed, without knowing the reason. Fournier examined the patient, and found no anus, and on introducing his finger into the vagina, found that the end of the rectum was loose, and pressing upon the womb, as it was filled with fæces. There was no sphincter ani. The opening of the gut was as large as its diameter. A canula was introduced, and the rectum cleared by a glyster; it was loaded with scybala and cherry-stones. The labour terminated well and easily.

Any of the external openings of the body may be wanting. The vagina may be completely imperforate, and so may the hymen. In these cases the menses have been retained; symptoms of pregnancy have existed, and serious mistakes have been made in practice, which I guarded you against early in the course.

In other cases the urethra is imperforate, either at the glans penis only, or a large portion of the canal may be impervious. I have seen two cases in new-born infants, in which the orifice of the urethra was merely covered with a delicate membrane, which was removed without the slightest difficulty. But when the urethra is thus closed, we cannot be certain, before this slight operation, how far it is imperforate, or how serious the case may be. If the passage be wanting through a considerable part of the canal, the case is scarcely remediable. In some cases the opening of the nostrils has been found closed. Sometimes, as in the urethra, the obstruction merely consists of a thin, delicate membrane; at other times there has been a permanent adhesion of the nostrils. Sometimes the iris is imperforate, in consequence of the persistence of the two original halves of the membrana pupillaris. Sometimes the membrana pupillaris disappears

* This is an error on the part of M. Portal. A high division of the crural artery is infinitely more rare than that of the brachial.—*Sub. Ed. L.*

spontaneously after birth, but that is very rare. It may always be assumed that the child will remain blind, unless the membrana pupillaris be removed by operation, as it once was by Cheselden in a case of this kind. Imperforation of the os uteri is not very uncommon. In some cases this anomaly arises from a membrane closing the os; in others, from the lips being united. Here is a specimen where it is scarcely possible to introduce a needle into the os uteri. Of course, although the os uteri be imperforate, the menstrual fluid will be secreted, but cannot be discharged, and then it will be necessary to make an incision into the uterus, as has been done by Delpech and others, with success. The uterus may expand to the size of pregnancy, from the gradual accumulation of the retained menses in its cavity, and all the ordinary phenomena of utero-gestation be produced. Incisions have been made in many such cases into the uterus, and the patients have subsequently done well, and borne children. All canals lined with a mucous membrane, continuous with the skin, are liable to have their natural openings imperforate. This organic condition, which is frequently referred by pathologists to disease, is really attributable to an arrest of development, from the persistence of a state which naturally ought to be only transitory.

The persistence of the ductus arteriosus, or foramen ovale, after birth, is by no means unimportant or uncommon. Either of these anomalies is occasionally found without other malformations of the vascular system, but this is rare; usually the heart is malformed. The embryonic or fœtal structure remains, and resembles the natural structure of reptiles. The persistence of the interauricular orifice and ductus arteriosus does not always, or even commonly, produce any particular symptoms during the first days of life, provided it do not oppose the perfect oxygenation of the blood; but such malformations sooner or later cause a disease called cyanosis, which I shall describe in a future lecture.

A complete inversion in the situation of the thoracic and abdominal viscera, the blood-vessels, and nerves, occasionally exists; all those organs which are ordinarily on the right being placed on the left side. Complicated as this deviation from the general plan of nature undoubtedly is, no disturbance of function is caused by it; and this well-known fact admits of an easy explanation. If the heart, for example, be placed on the right side of the thorax, as the situation of all the great blood-vessels is also inverted, and as they preserve their normal relations with the different cavities of the heart, the circulation of blood is not disturbed. If the spleen be placed on the right side and the liver on the left, the process of digestion is not interrupted, inasmuch as the position of the stomach is also inverted, and the normal connection between these organs still remains. There are many examples on record of such complete transpositions of all the viscera, without injury to the health of the individuals. An ingenious attempt has been made by Serres* to explain the cause of these transpositions. He states that his embryological observations lead him to infer that the liver is in fact a true centre, around which all the other organs range themselves in a regular manner. That the unequal development of the two lobes of the liver, which are primarily equal and symmetrical, exercises a direct or indirect influence upon all the other thoracic and abdominal organs, and determines their definitive situation in both cavities: and that if the development of the lobes of the liver deviates from the natural and ordinary course, a transposition of the thoracic and abdominal viscera necessarily results. The merit of plausibility may, perhaps, fairly be given to this speculation of M. Serres, but so far as I know it stands much in need of confirmation.

The subject of hermaphrodism occupies from 60 to 80 pages in the work of Geoffroy St. Hilaire. All I can say is this, that although we see many instances of true hermaphrodism in the animal and vegetable kingdoms, no such cases have ever existed in the human subject; no human hermaphrodite, in the proper sense of the term, has ever existed; not a single so-called hermaphrodite in man has ever been capable of performing the sexual functions of both sexes. All the alleged cases have merely arisen from various malformations, either of imperfectly formed men or imperfectly formed women. In consequence of malformations of the genital organs, girls have been educated for boys, and *vice versâ*. In several cases individuals who had been educated and looked upon as males have suddenly astonished the world by being delivered of children; and, in other cases, malformed men, who have been supposed to be women, have lived for many years as the wives of men, and the fact has not been discovered till death took place. The details of the various malformations which have led to these mistakes, are to be found in most works on physiology.

With respect to the frequency of monsters, so far as statistical accounts have been made, it appears that some kind of malformation occurs about once in three thousand births. We rarely find one anomaly alone. Sometimes the anomalies are of such a kind as to offer no impediment to the enjoyment of health; in other instances they lead to the speedy extinction of life.

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* "Recherches D'Anatomie Transcendante," &c. p. 108, et seq.

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Sometimes the ureters open into the urethra, and in such cases the bladder is generally absent. This is the natural structure of many animals. The ureters may open into the vagina or rectum. The vas deferens may open into the bladder or ureters. The vagina, or neck of the uterus, has been known to open into the bladder or rectum. In the latter case a woman may conceive and bear children. The anus has been known to enlarge sufficiently, with some laceration of the perineum, to admit the passage of the child during labour. In one case related by Portal, a woman had apparently no vagina, but only a small opening for the passage of the urine, and she had always menstruated by the anus. She was impregnated by the rectum, and at the end of pregnancy the very small opening near the pubis, by means of which it was impossible she could have been impregnated, enlarged, and delivery took place by the natural passage. The intestinal canal has very frequently been known to open at some other part than the anus. In those cases there is a deficiency of the intestine, the gut ending where the anomalous opening is. This is important, as I shall afterwards mention, in reference to the treatment of imperforate anus.

Irregular openings of the male urethra are by no means uncommon. I have seen three instances. Sometimes it opens at the upper part of the penis, constituting a species of malformation technically termed *epispadias*; at other times the opening is on the lower part of the penis, constituting another species of malformation, called *hypospadias*.

Occasionally, some of the natural openings of the urinary organs are found wanting. Most of these anomalies arise from a persistance of the early structure of the embryo, and represent in man the natural state of inferior animals. The intestines have been known to terminate in the bladder. The expulsion of the urine, mixed with meconium, is a clear proof of that phenomenon. In most cases death is the result of these malformations, but sometimes infants have lived for months with them. A remarkable case occurred to Fournier, of the rectum opening into the vagina. He was called in by three pupils, who had been attending a woman in labour for three days. Difficulties arose; the bowels were much constipated, and the patient had not had a motion for some time. He desired a glyster to be thrown up; the pupils attempted to administer it, but failed, without knowing the reason. Fournier examined the patient, and found no anus, and on introducing his finger into the vagina, found that the end of the rectum was loose, and pressing upon the womb, as it was filled with fæces. There was no sphincter ani. The opening of the gut was as large as its diameter. A canula was introduced, and the rectum cleared by a glyster; it was loaded with scybala and cherry-stones. The labour terminated well and easily.

Any of the external openings of the body may be wanting. The vagina may be completely imperforate, and so may the hymen. In these cases the menses have been retained; symptoms of pregnancy have existed, and serious mistakes have been made in practice, which I guarded you against early in the course.

In other cases the urethra is imperforate, either at the glans penis only, or a large portion of the canal may be impervious. I have seen two cases in new-born infants, in which the orifice of the urethra was merely covered with a delicate membrane, which was removed without the slightest difficulty. But when the urethra is thus closed, we cannot be certain, before this slight operation, how far it is imperforate, or how serious the case may be. If the passage be wanting through a considerable part of the canal, the case is scarcely remediable. In some cases the opening of the nostrils has been found closed. Sometimes, as in the urethra, the obstruction merely consists of a thin, delicate membrane; at other times there has been a permanent adhesion of the nostrils. Sometimes the iris is imperforate, in consequence of the persistence of the two original halves of the membrana pupillaris. Sometimes the membrana pupillaris disappears

* This is an error on the part of M. Portal. A high division of the crural artery is infinitely more rare than that of the brachial.—*Sub. Ed. L.*

spontaneously after birth, but that is very rare. It may always be assumed that the child will remain blind, unless the membrana pupillaris be removed by operation, as it once was by Cheselden in a case of this kind. Imperforation of the os uteri is not very uncommon. In some cases this anomaly arises from a membrane closing the os; in others, from the lips being united. Here is a specimen where it is scarcely possible to introduce a needle into the os uteri. Of course, although the os uteri be imperforate, the menstrual fluid will be secreted, but cannot be discharged, and then it will be necessary to make an incision into the uterus, as has been done by Delpech and others, with success. The uterus may expand to the size of pregnancy, from the gradual accumulation of the retained menses in its cavity, and all the ordinary phenomena of utero-gestation be produced. Incisions have been made in many such cases into the uterus, and the patients have subsequently done well, and borne children. All canals lined with a mucous membrane, continuous with the skin, are liable to have their natural openings imperforate. This organic condition, which is frequently referred by pathologists to disease, is really attributable to an arrest of development, from the persistence of a state which naturally ought to be only transitory.

The persistence of the ductus arteriosus, or foramen ovale, after birth, is by no means unimportant or uncommon. Either of these anomalies is occasionally found without other malformations of the vascular system, but this is rare; usually the heart is malformed. The embryonic or fœtal structure remains, and resembles the natural structure of reptiles. The persistence of the interauricular orifice and ductus arteriosus does not always, or even commonly, produce any particular symptoms during the first days of life, provided it do not oppose the perfect oxygenation of the blood; but such malformations sooner or later cause a disease called cyanosis, which I shall describe in a future lecture.

A complete inversion in the situation of the thoracic and abdominal viscera, the blood-vessels, and nerves, occasionally exists; all those organs which are ordinarily on the right being placed on the left side. Complicated as this deviation from the general plan of nature undoubtedly is, no disturbance of function is caused by it; and this well-known fact admits of an easy explanation. If the heart, for example, be placed on the right side of the thorax, as the situation of all the great blood-vessels is also inverted, and as they preserve their normal relations with the different cavities of the heart, the circulation of blood is not disturbed. If the spleen be placed on the right side and the liver on the left, the process of digestion is not interrupted, inasmuch as the position of the stomach is also inverted, and the normal connection between these organs still remains. There are many examples on record of such complete transpositions of all the viscera, without injury to the health of the individuals. An ingenious attempt has been made by Serres* to explain the cause of these transpositions. He states that his embryological observations lead him to infer that the liver is in fact a true centre, around which all the other organs range themselves in a regular manner. That the unequal development of the two lobes of the liver, which are primarily equal and symmetrical, exercises a direct or indirect influence upon all the other thoracic and abdominal organs, and determines their definitive situation in both cavities: and that if the development of the lobes of the liver deviates from the natural and ordinary course, a transposition of the thoracic and abdominal viscera necessarily results. The merit of plausibility may, perhaps, fairly be given to this speculation of M. Serres, but so far as I know it stands much in need of confirmation.

The subject of hermaphrodism occupies from 60 to 80 pages in the work of Geoffroy St. Hilaire. All I can say is this, that although we see many instances of true hermaphrodism in the animal and vegetable kingdoms, no such cases have ever existed in the human subject; no human hermaphrodite, in the proper sense of the term, has ever existed; not a single so-called hermaphrodite in man has ever been capable of performing the sexual functions of both sexes. All the alleged cases have merely arisen from various malformations, either of imperfectly formed men or imperfectly formed women. In consequence of malformations of the genital organs, girls have been educated for boys, and *vice versâ*. In several cases individuals who had been educated and looked upon as males have suddenly astonished the world by being delivered of children; and, in other cases, malformed men, who have been supposed to be women, have lived for many years as the wives of men, and the fact has not been discovered till death took place. The details of the various malformations which have led to these mistakes, are to be found in most works on physiology.

With respect to the frequency of monsters, so far as statistical accounts have been made, it appears that some kind of malformation occurs about once in three thousand births. We rarely find one anomaly alone. Sometimes the anomalies are of such a kind as to offer no impediment to the enjoyment of health; in other instances they lead to the speedy extinction of life.

Monstrosity is much more frequent in the

* "Recherches D'Anatomie Transcendante," &c. p. 108, et seq.

higher than the lower animals: this fact admits of an easy and at least a very plausible explanation. The more complicated the organisation, the more stages of development the various organs have to pass through, and the more likely, therefore, is their development to be interfered with from various causes, than in the simply organised.

The birth of a child of monstrous formation is not usually to be anticipated by the occurrence of any particular symptom during the pregnancy of the mother. When the fœtus is of monstrous formation, the mother, generally speaking, is in good health, and has had well-formed children before. There is scarcely an example on record in which women have produced monsters at their first labour. Occasionally we may suspect that the fœtus in utero is of anomalous structure: for example, parents who are ill-formed are likely to transmit to their offspring the same organic characters which they themselves possess; but we are not to suppose that they cannot have children of natural structure. In some cases a knowledge of the previous pregnancies may afford us useful information. Some well-formed persons have a sort of predisposition to give birth to children of anomalous formation, just as some parents who are healthy have a predisposition to give birth to children disposed to particular diseases. Thus, it not unfrequently happens that the offspring of young men and women who appear to be well-formed and in perfect health, are all acephalous or consumptive. These facts are not capable of explanation.

Although in many cases no peculiar symptoms precede the birth of a child of anomalous structure, in others the mother, during her pregnancy, especially during the first months, has laboured under disease, or suffered from falls, or other bodily injuries, or powerful moral emotions. In such cases, it has frequently happened that the health of the mother has been speedily re-established, and there was every reason to hope that no mischievous effects had been produced. In other cases of the kind the mother has suffered more or less from the bodily or mental injury until the period of her labour.

Children who present some slight anomaly in their formation are usually born at the ordinary period of pregnancy, and their delivery is not attended by any remarkable circumstance. But the birth of beings of positively monstrous formation is frequently accompanied by circumstances which deserve attention. The birth of many monsters occurs before the usual period, and sometimes it is retarded beyond the natural term of pregnancy. Double monsters are usually born at the seventh or eighth month of utero-gestation, and, as might be imagined, the act of parturition is generally increased in difficulty. But still it appears that no species of monstrosity absolutely excludes the possibility of natural or manual delivery. The delivery of double monsters is, as might be expected, frequently long and laborious; but St. Hilaire knows of no recorded case of the kind in which the mother has perished during labour, or in which, for the purpose of rescuing her from impending danger, either the Cesarian operation, or embryotomy, was required.

The efficient Causes of Monstrosity.—Upon this part of the subject writers of the 16th and 17th century gave full play to their imagination, and accumulated many whimsical and absurd hypotheses. Monsters being, in their belief, entirely out of the pale of the general plan and ordinary rules of nature, they were compelled to have recourse to the influence of wonderful causes. Hence those extraordinary births which were attributed to the adulterous connexion between men and beasts, from which deplorable and absurd prejudices some paid the price of their liberty, and others of their lives. Hence also the supposed intervention of the Deity, who was thought to create monsters for the purpose of astonishing or terrifying man; or of demons, the origin of evil, placed almost universally after the Deity, by the singular consent of the gross superstition of the people, most of the ecclesiastics, and even the philosophers of various sects. All these hypotheses, the product of the darkness of the middle ages, have long since ceased to have any influence; and even before the idea was maintained that beings of monstrous formation did not depart from the general laws of physiology, no trace of such speculations remained. The opinion gradually arose that both the causes and effects of monstrosity were simple and regular. And such, in fact, is the nature of all those causes of anomalies which have hitherto been proved by observation, and which are generally the hereditary transmission of monsters: diseases which have attacked the mother; violence inflicted upon her, especially upon the abdomen; and lastly, the influence upon the mother of some powerful moral emotion in the first months of pregnancy. St. Hilaire offers many interesting remarks upon some of these cases, and claims for his father the discovery and the demonstration of the remarkable fact, that there are certain monstrosities which are always produced by some mechanical violence inflicted upon the abdomen of the mother; namely, those in which the cranium is open, and in which the brain is deficient, and a vascular tumour exists in place of it. He states, that whenever it has been possible to learn all the circumstances of a pregnancy which has terminated by the birth of children thus monstrously formed, it has always been clearly proved that the mother had either

suffered from some violent blow or long-continued pressure upon the belly. In the few cases of the kind in which no external violence could be proved, the mother had suffered from some violent moral emotion, the immediate effect of which was a powerful and sudden reaction of the abdominal viscera; or she had suffered from some severe abdominal disease.

I cannot enter into the details of the cases related by St. Hilaire, in proof of his arguments upon this subject; to me they appear clear and convincing.

Connected with the subject of the efficient causes of monstrosities, there is another question of very difficult solution, and which has long excited the attention of physiologists, viz., the influence of moral impressions of the mother upon the fœtus in utero. The all-powerful influence of this cause would, no doubt, be one of the best-proved facts in physiology, if the truth of an opinion could always be inferred from the number of its supporters, or the force of their conviction. In proof of the antiquity of the belief of the influence of the mother's imagination upon the young in her womb, the stratagem of Jacob, to increase the "party-coloured lamba" of Laban's flock, is referred to by all writers. Even in the present day, this doctrine is supported by many writers, and is more or less generally admitted by all classes of society. A few modern physiologists, indeed, have entered their protest against it, and are inclined to exclude, altogether, as an efficient cause of monstrous formation, the moral influence of the mother, which the elder writers regarded as certain and quite satisfactory. There can be no doubt that some anomalies originate from moral motions experienced during the course of pregnancy by the mother; and upon this subject St. Hilaire offers some, at least plausible, remarks. There are various kinds of moral emotions or impressions, no matter whether grave or gay, pleasurable or disgusting. Some are violent and sudden; others weak and momentary; others weak, but more or less permanent. Each different kind of influence upon the mind will produce different effects. This is confirmed by facts. Violent and sudden emotions of the mind very frequently produce as great bodily disturbance as mechanical injuries, and may, no doubt, cause imperfection in the structure of the fœtus. Many remarkable proofs of the truth of this theory are given by St. Hilaire, and numerous writers.

The influence of slight but permanent mental emotions of the mother upon the structure of the fœtus in utero, is not proved by facts equally convincing, but can scarcely be altogether discarded. There are not wanting well-authenticated examples of malformed or even monstrous infants given birth to by women who had suffered during their pregnancy from long-continued mental despondency, and grief. The efficiency of such a cause to produce the alleged effect is too probable to admit of a hasty denial; but further than this we cannot go; we cannot admit the influence of slight and momentary moral impressions of the mother upon the fœtus. According to the popular belief, if a pregnant woman look at a particular object, is disgusted or frightened by it, and, above all, if she "longs" for it, it very frequently happens that the resemblance, both in shape and colour of that object, will be imprinted upon the body of the fœtus; and hence the popular rule, that a woman with child must have all her longings gratified, lest the child should be marked. In support of this belief you will find, in numerous writers, a very imposing array of so-called facts. But examine them closely, and you will also find the evidence upon which they rest is anything but satisfactory. In cases of this kind the presumed cause of the "mark" or anomalous structure of the child, is never thought of until it is seen at its birth, and then, for the first time, some circumstance or another that occurred during pregnancy, is referred to as the cause of the mark or malformation. Still, as Dr. Blundell says, "in matters of this obscure and uncertain kind, to ridicule, without giving ourselves the trouble to examine, is at once petulant and unphilosophical;" and I refer you to two or three remarkable and authenticated cases, which he has recorded, which show a curious coincidence between impressions made upon the mind of the mother, and appearances upon the body of the child.

Thus, Gentlemen, I terminate a confessedly brief and very imperfect sketch of the modern researches upon the subject of monstrosity. I have done, however, all I intended; and, if you will take my advice, as *students* you will go no further into this now very extensive subject. If you are inclined to approach it at a future time, you will find the works of St. Hilaire and Serres, which I have so frequently referred to, by far the most complete. The great and most striking faults of the former are dry and tedious details, fatiguing repetitions, and minute, and, in my humble opinion, very unnecessary divisions.

ACCOUNT OF THE

RECENT EPIDEMIC SCARLATINA IN GLASGOW;

ITS

SYMPTOMS, SEQUELÆ, AND TREATMENT.

By MATTHEW H. GIBSON, *Esq., Surgeon.*

SCARLATINA having prevailed to a formidable extent in this city for some months past, and having engaged much of my time and attention, I propose to offer a few ob-

servations upon it. My opportunities of seeing and treating this disease during the present epidemic have not been few, having had under my care 46 cases, between the ages of 7 months and 18 years.

In the first place, I propose to delineate the natural course of the disease, or, in other words, the order of succession which the symptoms put on, when allowed to proceed undisturbed by any extrinsic agency. In the second place, I shall give a short account of the diseases which supervened, or the *sequelæ* of scarlet fever, during the present epidemic. And, in the third and last place, I shall describe the mode of treatment pursued in the several stages and varieties of this complaint; at the same time making a few remarks on some of the remedies which have been most commonly employed and advised.

Writers on this subject have divided this fever into three stages or varieties, viz., scarlatina *simplex*, *anginosa*, and *malignu*, this last—by Dr. Armstrong—subdivided into other three, which he calls the *inflammatory*, the *congestive*, and (the third) a combination of the other two, because it is attended by venous congestion of the viscera, and by a partial and an impeded arterial reaction. During the present epidemic I have seen but two cases of scarlatina simplex, the whole of them being either of the second or third form, but more frequently a mixture of both, the one rapidly running into the other. This epidemic, in general, has been very fatal; indeed, the mortality amongst children in this city during its prevalence I am sure exceeds that from all the other diseases put together. Scarcely a family has escaped; where the children were numerous, three, four, or five were sick at one time. Two out of five, and in some instances two out of three, of a family, have fallen victims to this dreadful scourge, either from the disease itself, or its effects.

I. *Symptoms.*—In the present instance its attacks were very sudden, and in a number of cases its termination was similar, caused either by suddenly exhausting the powers of life, producing extreme congestion in the cavities, or effusion into the brain. This latter is not unfrequent. Two cases of the kind came under my own observation, the one nine years and the other seven years of age, both males. The first fell a victim in about 18 hours', and the second in 48 hours' illness, both with well-marked symptoms of effusion into the head. The attack, as in ordinary cases, was not slow and gradual, nor preceded with languor, lassitude, and hot skin, for a day or two previous to the eruption making its appearance; but, on the contrary, its attacks were very sudden. The child, having been, perhaps, not an hour previously, lively, and, apparently, in excellent health, comes home with sickness, severe vomiting and retching, hot skin, quick pulse, and sore throat. In looking into the throat, the fauces are found inflamed and tumid. On examining the neck, behind the inferior maxillary bone, and immediately below the lobes of the ears, swellings corresponding with those in the fauces are always found present. Towards the evening there is wandering and slight delirium, and by the next morning the eruption is out. On examining the fauces again, ulceration of the tonsils, uvula, and velum pendulum palati is seen to have taken place; interspersed, and sometimes completely covered over, with patches of a whitish colour. Considerable delirium now prevails, more especially towards the evening; the head is hot, and the eyes are red and inflamed; so likewise is the lining membrane of the nostrils; the pulse is remarkably quick, from 133 to 140 in the minute; the tongue is furred, and often dry; excessive thirst, and great prostration of strength, immediately supervene; presently a thin, ichorous discharge proceeds from the nostrils, sometimes clear and afterwards yellowish, but in more severe cases it is of a pale greenish colour, so acrid that it excoriates the upper lip, and produces deep ulcerations about the ala of the nose, extending upwards into the nostrils. This is immediately followed by deep ulcerations on the lips, at the angles of the mouth. The throat is loaded, especially in children under three or four years of age, with a glutinous mucus, which is so tenacious that it can with difficulty be taken out. In those cases where it is secreted in large quantities, the respiration is difficult and laborious; deglutition is performed with difficulty, and fluids, attempted to be swallowed, return by the nose. At this stage of the disease the tongue is often very red and moist; at other times it continues brown and dry.

In such cases as are above detailed, the eruption generally came well out, was exceedingly bright, and continued so for six or seven days, when it gradually disappeared. These symptoms, after continuing for a time, gradually abated, and the child recovered. In other cases, however, the result was not so favourable as in the two cases noticed above. These patients had no unfavourable symptoms, until those of the head made their appearance. The one, aged nine years, arose from bed in the morning in his usual health, and in the course of an hour was seized with violent vomiting and purging, which were immediately followed by hot skin and excessive thirst: I saw him at about 12 o'clock; his pulse was extremely rapid, his skin burning, and the eruption well out; small glandular swellings were situated inferior to the lobe of each ear, and on examining the throat the tonsils were found inflamed and swollen; small white patches of ulceration were on their surface; he drank copiously, and vomited, violently,

a greenish-coloured fluid; there was extraordinary exhaustion, and a dull, heavy, listless eye. Calomel and opium, in small and repeated doses, during the day, and a sinapism to the gastric region, appeared to mitigate the vomiting; the depression and exhaustion, however, did not abate; he became comatose, and died at about 3 o'clock on the following morning.

The other, seven years of age, was seized while at school, came home, was sick, and vomited. I saw him in the evening; the eruption was out, his "chokes" were swollen, and the fauces were much inflamed; his tonsils were tumid, with large white specks upon their surfaces; he appeared to be rather heavy and drowsy-looking about the eyes; his head was hot, and there was some delirium; pulse 130. Six leeches were ordered to his throat; cold applications to his head, and hot fomentations to his feet. Next morning he was insensible; pupils dilated, neck much more swollen; bowels very laxative, dark, and offensive; his head was now shaved, and a blister applied; calomel and chalk were administered frequently; by night deglutition became difficult, and next day he died.

Having thus taken a cursory view of those symptoms which we may denominate *scarlatina anginosa*, I shall, in the second place, enumerate the principal or leading symptoms of the more serious and fatal form, termed *scarlatina maligna*.

Dr. Armstrong, in his work on scarlet fever, divides scarlatina maligna into two varieties, the *inflammatory* and the *congestive*, and this last into the *irregular* and the *regular*. During the present epidemic, so far as my experience has taught me, the inflammatory and regular congestive were the two varieties which have been most prevalent. Indeed, not one case of what is called the *irregular congestive* came under my care. The inflammatory malignant species appears to be a continuation of the scarlatina anginosa in a more severe form.

In the majority of instances the symptoms during the first few days were nearly the same as in those just now described, but rapidly assumed the typhoid character. The efflorescence, perhaps, being well out, suddenly disappears, and in the course of a day reappears, but only in patches, interspersed throughout the body; this is not, however, always the case; in some cases the rash kept pretty steadily out for some days, but became of a dark red or purple colour, and often intermixed with petechiæ. The fauces, at first being ulcerated and interspersed with white specks, partook of a dirty white or dingy ash colour, progressing rapidly to a brownish and occasionally to a black colour; the tongue also assumed the same state, together with the lips and teeth; the tongue becomes cracked and furrowed in several places, and bleeds upon the slightest injury; the discharge which issues from the nostrils at this period of the disease is thin, and of a greenish-yellow tint, and extremely acrid; the lining membrane of the nostrils was ulcerated, and the breath extremely fœtid. The neck, from ear to ear, to the sternum, became highly swollen, and the whole front of the neck was of a livid colour; the face partook of the same appearance; the eyes were suffused and mattering, and a considerable degree of stupor ensued, followed by coma. The respiratory organs, especially about the upper part of the trachea, were always more or less implicated, producing a constant irritative cough, with a croupy sound, and a hoarseness in the voice; the breathing was much affected, and became so much obstructed in some cases as to threaten dissolution. The pulse now, instead of being rapid and vibratory, as at the commencement, becomes weakened, and quickened, until it is hardly perceptible; the extremities become cold, and the general heat of the body is diminished. In fact, the whole powers of the system become exhausted, and the child is carried off either by convulsions, or from suffocation, but very often without a struggle.

This form of the disease during the present epidemic has been most prevalent and most fatal; a few have recovered, but the majority have perished. This species, when it terminated fatally, generally ran its course in from four to eight days. One severe case of this kind, particularly, came under my immediate notice—

A child about 4 years of age; she lingered for nearly five weeks, and at last died suddenly from the rupture of a blood-vessel in the ulcerated fauces. This child was comatose, her pulse could scarcely be felt, and the extremities and prominent parts of the body became cold, but by means of heat and stimulants, wine, brandy, and quinine, she rallied; the sloughs in the throat separated, and the tongue which was also black, cleaned; the bowels, which were extremely laxative, and the stools, which were green and blackish, got into a healthy state; the child, to the astonishment of all, was gradually, though slowly, recovering, when, during the night, she coughed, and vomited a considerable quantity of pure arterial blood, and by the time the mother got up she had expired.

Some very important and unusual cases during this epidemic came under my charge, and were it not for the probability of this paper becoming too long, I should detail some of them. I must satisfy myself by giving a superficial notice of them.

This brings me to the *congestive* form of the complaint, viz., the *regular congestive*.

Three cases of this description occurred to me; two in one family out of three, and one in another out of two. The subjects of

this form of the disease are similarly attacked with those in the other species; the efflorescence, however, from the beginning, is not so bright; it is generally of a dark purplish or copper colour, and increases in tint as the disease advances; in some cases, after keeping out for one or two days, it suddenly recedes and never reappears; the heat of the surface was not so hot as in the inflammatory form; the excitement was considerably less; the breathing was quick and anxious; the pulse quick and rapid; the tongue furred, and red at the point and edges; the thirst not so great; the fauces swollen and slightly ulcerated. In a day or two great oppression and prostration of strength supervened; indeed, the depression of the vital functions was so great that the little patients sank as if overcome by a shock. In general there is not a great deal of delirium. On the contrary, the brain appears to be oppressed and confused, and the patient lies calm and indifferent to surrounding objects. During this period the face became swollen, and of a livid pale colour, so likewise did the neck. The fauces begin to get dark, and proceed rapidly to a state of gangrene; the tongue becomes rough, brown, and dry, and even black; sordes occur on the teeth, and there is offensive breath. The breathing, before quick, is now slow and impeded; the pulse is low, irregular, and feeble; the eyes put on a peculiar, dull, heavy, or rather an inebriated expression; the abdomen is tumid; the bowels lax, the stools being dark, or green-coloured; deglutition is performed with difficulty, and the breathing is laborious; the pulse flutters, in some cases is imperceptible; the most prominent parts of the body, such as the cheek, nose, chin, ears, and extremities, become cold, and the child dies comatose.

One of the three following cases will serve to illustrate the above symptoms. It will be seen, from the history of the case, that the attack was remarkably sudden, that death took place very unexpectedly, and that any administration of medicine was hopeless. The other two cases were seized similarly, with the exception that the symptoms during their progress were more gradual, the one being three days, and the other five days ill, but the results were equally the same.

The subject of the case, a boy, five years of age, was taken ill in the evening, after enjoying his usual day's sport with his playmates. He felt inclined to go to bed rather earlier; his mother was awakened during the night by his being very restless, and having a burning skin. I did not see him until the afternoon of the same day, when he was moribund, and a dark brownish foam was issuing from his mouth, of a very fœtid odour. On making inquiry, I learnt that the rash appeared in the morning, though not very distinctly. He had difficult breathing, and sore throat. A medical man having been previously called in, prescribed two leeches to be put on the sternum, to relieve the breathing! On my visiting him, he was near dissolution. As mentioned before, he was moribund, and a brown-coloured fluid, of a fœtid odour, was issuing from his mouth, and pulse was gone, and his hands, feet, and all the most prominent parts of his body, were icy cold. On examining his throat, internally, it was found to present a perfect mass of putridity, of a dark brown or blackish colour; his tongue was black, almost resembling a piece of burnt stick, with sordes on the teeth; externally, his neck and throat were full and livid. He died in about an hour afterwards. This was the most sudden case of the typhoid kind which ever came under my observation. In fact, the disease progressed with such fearful rapidity, that it bade defiance to medicine.

II. *Sequelæ*.—In a great number of instances the recovery was much protracted by great debility; and a considerable number, not only from debility, but from a number of complaints, some of them unusual, ensuing immediately on the subsidence of the disease. The most common sequel of scarlatina was anasarca, with or without hydrothorax; nine out of the forty-six cases which were treated during this epidemic were anasarcous, six of which presented œdema of the legs, feet, and face, alone; and three of them the same, combined with hydrothorax: two of these died, one of the six and one of the three, the last, after three days' illness, from the first symptom of water in the chest; all the others recovered, though gradually, and with exceeding tediousness. One case, particularly, was very wearisome and obstinate. The subject was a girl, aged eight years. The anasarca, after continuing for five or six weeks, nearly wholly disappeared, when a relapse took place; the face became very œdematous, and of a blueish white colour; the breathing difficult and oppressed, and the heart throbbed violently. These symptoms were overcome by means of blisters, digitalis, and diuretics, and appeared to be doing well, when the patient was seized suddenly one night with nervous convulsions, affecting the whole body, but particularly the hands, which were clenched; the tongue was violently agitated within the mouth, thrust out frequently, and severely bitten; the eyes were open and fixed, and the pupils dilated. The bowels had been opened a few hours previously with castor oil. A blister over the whole head completely removed these symptoms. Some indications, however, of the complaint again returning, the blister was again had recourse to. The anasarcous swelling slightly re-

turned, but, by the use of the proper remedies, she is now recovering, the œdema being all removed, and her appetite good.

Rheumatism, a painful affection of the joints, particularly the elbows, wrists, knees, and ankles, sometimes so excruciating as to be unable to be rubbed, or even touched, with much swelling, in two of these cases occurred.

Chicken pox, in three cases, made its appearance immediately on the efflorescence disappearing, with a slight return of the pyrexial symptoms. These cases followed their usual course, and soon recovered.

Suppuration of the glands under the base of the inferior maxillary bone was not uncommon; several cases occurred, which were of minor importance, with the exception of one, a child of eleven months old. I found her very much debilitated and exhausted; along with a severe purging, there was a large open sore under the base of the jaw, immediately on the right side of the chin; it extended considerably inwards and upwards, towards the angle of the bone; the base of the jaw-bone could be seen white, nearly throughout its whole extent; the opposite side of the skin was red and livid, and had the appearance of giving way also. By stopping the laxity of the bowels, and exhibiting quinine and wine, the ulcer is closing up, the progress of the other side is stopped, and, upon the whole, the infant appears to be doing well.

III. *Treatment.*—From the nature of the symptoms, the progress of the disease, combined with the great tendency to the typhoid state, required considerable attention and forethought as to the treatment. Various are the opinions entertained regarding the treatment of this disease. Some have considered the antiphlogistic plan to be the best; others have condemned that mode of treatment as vicious, and have advocated a method directly opposite, viz., the tonic plan. Others, again, have strongly urged the necessity and advantage of the cold affusion, regarding it almost as a specific.

I doubt much the efficacy of any of these remedies in all cases of scarlatina; for instance, in the present epidemic, neither one nor another could be applied with safety in the majority of the cases which came under my care; and in those cases where it would have been serviceable, I doubt much if they would not have recovered by trusting to Nature alone for the cure.

The treatment which was followed out during the prevalence of this complaint, and which was found to be the most favourable, was, principally, after the first few days, the tonic and stimulant plan. From the nature of the complaint, the suddenness of the attack, followed immediately by extreme prostration, combined with the great predisposition to degenerate into the typhoid character, depletion, as Dr. Armstrong recommends, or the cold affusion of Dr. Currie, would, I have no hesitation in saying, have been immediately followed by such a degree of collapse as would have inevitably destroyed the patient in a very short time. General depletion and cold affusion, are, indeed, excellent remedies in their own places; that is, in cases where there is much inflammatory action, great excitement, and a bright red efflorescence, with a strong quick pulse; but, on the other hand, where there is a weak rapid pulse, a faint efflorescence, a brown, dry tongue, a sloughy fauces, and all the symptoms running rapidly on to malignancy, it would be highly culpable, I should consider, to administer such remedies. Local depletion, with leeches, was tried in some cases which we thought admitted of it, but in most of them it did more harm than good; the fever was not in the least measure subdued by it, and the bites ulcerated into large open sores. Blisters were in some few instances applied, but the result was similar to that of the leeches; blackness and gangrenous appearances occurred, and, from the irritation and consequent exhaustion produced, they proved very detrimental.

At the commencement of scarlet fever, an emetic is generally recommended. In the present instance it was not indispensable, as the patients themselves, in general, had very violent vomiting and retching. To quiet this, a full dose of calomel, combined with a small quantity of opium, with the assistance of a sinapism to the gastric region, was followed frequently by the happiest effects. After the irritation of the stomach was allayed, a mild laxative—not a purgative—was administered. *Aq. acet. ammon.* with antimonial wine, and strong doses of nitrate of potash, were frequently exhibited. If the eruption was slow in appearing, a warm bath at bedtime, often, was of great service. As the fauces got tumid and ulcerated, but particularly where the excitement was very great, leeches to the neck, below the ears, followed by small blisters, were sometimes of use, especially when the parts remained free from any appearance of gangrene. These cases were, however, exceedingly few, and these few were children pretty far advanced in age, about ten or fourteen years old. In young children, and in infants, mortification invariably ensued, and they as invariably died, with only one exception. From the repeated recurrence of this disagreeable circumstance, I had recourse to a stimulating liniment, along with emollient cataplasms. Cold water-cloths were kept constantly to the head, and when the surface was very hot, sponging with vinegar and water was of considerable service. In a

few days after the commencement of the fever, a little wine was given, and increased according to the severity of the case, and in very severe cases quinine, with sulphuric acid. The thirst was quenched with water, acidulated with lemon-juice. The usual local remedies which were applied to the fauces, were the nitric acid diluted, and the nitrate of silver in solution, ten grains to the ounce of distilled water for infants, and from twenty to thirty grains to the ounce for older children and adults; these applications were of much service; they facilitated the reparation of the sloughs, stopped their progress, and were very conducive to the healing afterwards, especially the nitrate of silver. When the patients were of such an age as to gargle the throat, warm wine and water, or vinegar and water, was the usual remedy. Some practitioners are in the habit of using the solid nitrate of silver to the sloughy fauces, but I cannot see any real good it can produce, more than the caustic in solution; the solution has many advantages over the solid caustic, and one among the rest, and a very important one too, particularly in infants and stubborn children, where there is always considerable difficulty attending its application is, that it can be applied sooner, and more easily, by means of a small hair-pencil.

As the disease progressed, when the pulse was low, or the efflorescence disappearing suddenly, a solution of the carb. of ammonia, in proportion to the age of the patient, was prescribed in place of the spir. minder. and nit. potass, and was exhibited alternately with the wine and quinine. Artificial heat, when the extremities became cold, by means of hot salt or bran bags, bottles of hot water or hot bricks, was of great benefit. Light nourishing diet, to support the strength, was given in small quantities and often repeated, such as arrow-root, sago, calf-feet jelly, and weak beef-tea.

Such is the history of the prevailing symptoms, and a cursory view of the treatment resorted to in this epidemic. It now remains for me to sum up the whole in the form of two Tables, illustrative of the foregoing remarks. (See opposite page.)

Before concluding this paper, I would mention one fact which surprised me. Not many weeks ago I was conversing with a medical gentleman of this city, a lecturer of some talent, respecting the prevailing epidemic; when, to my astonishment, he informed me that he had never seen a case of scarlet fever in a child under *two years of age* with the *efflorescence*, and inquired of me if ever I had remarked the same. I may observe here, that the youngest child which came under my care during this epidemic was *seven months* old, and the eruption in that case was very distinct and bright. I should feel obliged by some of the numerous readers of THE LANCET forwarding their experience respecting this important point.

Sussex-place, Adelphi-house, Glasgow,
Feb. 22, 1840.

NAVAL SURGEONS.

To the Editor of THE LANCET.

SIR:—The absurdity and illiberality of the following document needs no comment. By inserting it in your widely-circulated Journal you may prevent a vast sacrifice of money and time to parties who are preparing themselves to fill a situation in the Naval Service really not worth seeking after.

C.

Reform Club, Whitehall,
March 10, 1840.

By a recent regulation of the Lords of the Admiralty, an Assistant Surgeon entering the Naval Service after the 1st Feb. is to be appointed by *an acting order*, to be confirmed on the expiration of *one year* from the original date, provided he produces a favourable testimonial of his moral character and attention to his duty, and of his strict and humane attention in the execution of his medical duties, and of his having made diligent use of the opportunities afforded him to improve his professional knowledge, both by study and practice. The certificate to be signed by the *Captain* and Surgeon; if at the hospital, by the *Captain Superintendant* and Physician.—*Naval and Military Gazette*, March 7, 1840.

ERGOT NOT CONTAGIOUS.—Hertwig, a German physician, has concluded, from a series of careful experiments, that the disease is incommunicable by contact. He surrounded the ear, when in flower, with the powder of spurred rye, without in any degree affecting the healthiness of the plant or its grain. My own experiments correspond in their results with those of Hertwig. I have sown rye in conjunction with ergot, both in powder and in substance, without the process of germination being either retarded or modified, or anything but a natural and healthy maturation resulting. I have regularly watered rye, from the sowing of the seed to its period of ripening, with a solution of ergot, but without producing a trace of the disease. Nor does the direct application of the powder of ergot to the ears of rye seem in any way to affect them. Indeed, a solution of ergot does not appear to have any influence upon vegetables. I have watered turnips, stocks, slips of currant-trees, &c., for weeks together, without injuring them in the least.—*Mr. Wright, Edin. Jour.* Jan.

TABLE 1.—Shows the different Forms of Scarlatina which prevailed during the Epidemic, the Number attacked in each of the Forms, and the Recoveries and Deaths.

SCARLATINA.				
Forms.	Number.	Cured.	Died.	Total.
S. Simplex	2	2	0	2
S. Anginosa.....	19	16	3	19
S. Maligna	25	6	16	22
Inflammatory .. 22		0	3	3
Reg. Congestive 3				
	46	24	22	46

TABLE 2.—Shows the *Sequelæ* of Scarlatina during this Epidemic, the Number and Variety of Sequel-Diseases occurring in the different Forms of Scarlet Fever, and the Recoveries and Deaths.

SEQUELÆ SCARLATINÆ.						
Sequel-Diseases.	Different Forms of Scarlet Fever in which Sequelæ appeared.			Cured.	Died.	Total.
	S. Simp.	S. Ang.	S. Malig.			
Rheumatism	0	1	1	2	0	2
Chicken Pox	1	2	0	3	0	3
Œdema, or anasarca, of extremities and face ..	0	4	2	5	1	6
Hydrothorax, with Œdema .	1	2	0	1	2	3
Suppuration of glands under the jaw, whereby the base of the bone was exposed	0	1	0	1	0	1
Rupture of blood-vessels in the fauces, from ulceration	0	0	1	0	1	1
	2	10	4	12	4	16

THE LANCET.

London, Saturday, March 14, 1840.

Mr. Chadwick, in the official reply to Mr. Fox which we published last week, states, that the Poor-Law Commissioners have "reported fully to Her Majesty's Government on the subject of Medical Relief." He also states that the "Report will be laid "before Parliament in the course of the pre- "sent Session; and that the Commissioners "*will not recommend any general and uniform* "*system of Medical Relief to the Boards of* "*Guardians until that Report shall have been* "*presented to Parliament.*" This does not necessarily throw the question of Medical Relief back another year, as the enactments of Lord John Russell's Bill, or the new regulations *may be* brought into operation as soon as they are passed; but it has that tendency; and with Mr. Fox we shall be greatly disappointed to find that another year is to be commenced under the degrading system of Tender.

We are decidedly of opinion that a strong effort should be made in this month, and upon entering a new parochial year, to get rid of many of the grievances and evils of the present system. The low rate of remuneration is one of the grievances to which we promised to recur, with the intention of putting our readers in possession of established facts, that will enable them to answer the very common and obvious question: "Upon what grounds do you assert "that the present medical salaries are insuffi- "cient?" The Boards of Guardians are anxious to reduce the rates to the lowest possible sum; but it must not be supposed, without positive proof to the contrary, that the Guardians, or the Commissioners, are utterly disregardful of the interests of the Sick Poor. It must not be supposed that in the teeth of the Parliamentary Returns, and the facts established before the Parliamentary Committee, they will continue to mock the defenceless paupers with bad physic, and inadequate medical attendance.

It was shown that the cost of medical attendance, when analysed, resolved itself into three elements: the cost of drugs and instruments; the price of skilful advice; and the expense of journeys. The cost of medicines is not the wholesale price, or the price which is paid by hospitals and dispensaries. The Medical officer has to divide the drugs into doses, or he has to employ a person to do this for him; he has to weigh and measure each article accurately, and to prepare it, in fact, for administration. The difference is far from inconsiderable; for the druggists charge eight or ten times the prime cost of medicines, and do not consider that the rate of payment affords them more than a fair return for the capital invested, the waste, the skill and labour. Medicine compounded is merchandise manufactured; it is the same as raw cotton converted into articles of dress fit for use. The *second* element of expense, is the charge for medical advice; this varies from a sum as low in some places as half-a-crown, to a *guinea* each time the patient receives a visit or advice. A surgeon will charge a guinea for simply seeing a patient who calls upon him: the patient sends for him at the distance of seven miles, and he will charge five guineas; four guineas are added for the time and expenses of the journey. This illustrates the *third* element in the cost of medical attendance. The time and expense of visiting patients at their own houses varies with the distance, while the advice and the cost of medicines remain invariably the same wherever the patient may be placed. To visit patients scattered over an area nine miles square, would involve at least double as much expense as visiting the same number of patients in a Union six miles square.

Now, when the average number of cases attended, or the number of persons constantly sick, or the population requiring attendance, is known, what should be the amount of salary? Through the great progress which has recently been made in

medical statistics, these questions can be satisfactorily answered; affording a good example of the application of the higher and more scientific departments of medicine to practical questions.

Let us first take the question. What would be the cost price of efficient medicines for 100 or for 1000 cases of sickness, taken indiscriminately? When this question is first proposed, an objection will arise in the minds of those who have not attended to the philosophy of the subject. They will say that cases of sickness vary in their duration, and in the amount and quality of the medicine required. This is true. But when a considerable number of cases of sickness is taken indiscriminately, these are found by *experience* to be of nearly the same *average duration*, and to require medicines of nearly the same average expense. In the Army, for instance, 100 soldiers experience 92 attacks of sickness in the year, and the duration of the cases is 15 days. Take different regiments under the same circumstances, and neither the number nor the duration of the attacks will vary to an amount of any practical importance. In the Army every slight case is reckoned; the men are examined by the surgeon, and often sent to the hospital against their will. The severe cases of persons admitted as in-patients into the hospitals, remain under treatment.

In calculating the cost price of medicines per case, it is, therefore, necessary to determine what kind of cases is meant, and whether they are such cases as occur at the *London dispensaries*, or at the dispensaries in the country, where the patients can walk to a given point; for then it may be inferred that they are, on the whole, slight cases, and are not such as are scattered over the districts which the Union Surgeons have to attend. Taking the patients as they occur at the dispensaries, Dr. Bigsby has published a very useful pamphlet on the subject. He has given a table, from which it appears that the *cost price* of medicines in 22 dispensaries was £2826; and that 26,479 patients were provided for at that cost. The cost price of medicines was consequently *two shillings and three half-pence* per case. It may safely be assumed that the medicines for the out-patients of hospitals cost nearly the same as the medicines for dispensary patients.

At nine hospitals, namely,—the Salop, Chester, Bedford, York, Colchester, Winchester, Salisbury, Aylesbury, and Lincoln, some of them taken for ten, some for five, some for three years, the number of patients amounted to 38,428; two-thirds of them, or 25,465, were out-patients, and 12,963 were in-patients. The cost price to the hospitals of medicines, exclusive of wine, was £6898, or *three shillings and seven-pence* per case. In the two years 1834, 1835, the number of patients discharged from St. George's Hospital was 13,258; 4025 were in-patients, 9233 out-patients. The drugs alone cost £2046; leeches and herbs, £601; bottles, utensils, and small articles, £121; spirits of wine and brandy, £301; vinegar and chloride of lime, £136; surgical instruments, £301; making in all, £3509. This was equivalent to *five shillings and three-pence per case*. The subtraction of the £301 for *spirits of wine* and *brandy* would reduce the sum to about 4s. 10d. per case.

The Reverend Charles Oxenden procured returns from nearly all the county infirmaries for one year, when 49,395 out-patients, and 16,796 in-patients were treated. The cost of drugs, leeches, spirits, wine, instruments, phials, bandages, and trusses, was £15,216. The cost of drugs and other medical appliances was 4s. 4d. per case; exclusive of wine, brandy, and trusses, probably *three shillings and six-pence* per case.

From a return published in the "Medical Annual," by Mr. Richard Smith, the venerable Surgeon to the Bristol Infirmary, it appears that the drugs and medical appliances for the treatment of each patient, in the ten years 1826—35, cost 4s. 9¼d.; but the expense of trusses was £1649 11s. 4d.; of wine and spirits, £699; which, when deducted, would reduce the amount to 4s. per

case. About 52,000 patients were treated in the ten years.

We might give further returns, but it is unnecessary, as this immense series of facts enables us to draw the irrefragable conclusion, that, exclusive of wine, brandy, spirits of wine, and trusses, the *cost price of medicines* for out-patients and in-patients is certainly not less than *three shillings and sixpence* per case.

When the salaries of the Medical officers in the metropolis were divided by the number of cases treated in 1837, what will it be supposed the payment per case was found to be? Can our readers conjecture? It was *one shilling and five-pence farthing a case*, and not a single farthing more. What, then, was the remuneration for skilful advice? Nothing. What was the return for the medicine supplied to the paupers? Two shillings per case *less* than nothing! At this rate, when the salaries were £100 a-year, the druggists' bills, where efficient remedies were supplied, amounted to £243 a-year.

The cases were all regularly submitted to the Boards of Guardians; perhaps many of them were counted twice; and many of them were not treated to their termination. But the same fact holds of the hospital patients, upon which the previous calculations were founded. The cases are strictly comparable.

Another objection has been mooted, and it has been hinted that the pauper cases are not so severe, nor of so dangerous a nature, as the hospital cases. Taking the out-patients with the in-patients, the reverse is, we believe, the truth. And the immense mortality (one-fifth or one-sixth of the total deaths in the country) which occurs under the present system, is sufficient to prove that the cases are of no trifling nature, and that they require the full average quantity of medicine.

It has been said that Mr. CHADWICK's dietetic principles should be applied to remedies, and that if there were a *Pauper Pharmacopœia*, published by authority, the expense of drugs might be considerably diminished. Grant that for a moment, and all the suppositions that have been made, and, we ask, is the price of remedies to be the wholesale price? Is no addition to be made for the trouble of compounding the drugs? The chemists and druggists would charge 30s. for compounded medicines which originally cost them 3s. 6d.

The rate of payment per case in Dorsetshire, Devonshire, Lincolnshire, Lancashire, Cheshire, Norfolk, Suffolk, and Wiltshire, was ascertained to be 3s. 3½d. per case. When the great distance they have to ride to visit the sick, and the expense of horses, are taken into account, it will probably be found that the Surgeons of country Unions are paid as badly as Surgeons in town. They have nothing for medical advice, nothing for journeys, and 2½d. a case *less* than nothing for the efficient remedies which the conscientious practitioner feels himself bound to supply.

The Medical witnesses gave it as their opinion, before the Parliamentary Committee, that the salaries should be equivalent to 6s. 6d. per case, including the town districts; that the lowest rate should be 5s. a case; and that a scale should be formed, rising progressively to 10s. or 15s., as the extent of the districts augmented. We have stated some of the reasons upon which this estimate was made, and shall adduce others next week.

Since the above article was written, we have received the copies of a correspondence between the President of the *British Medical Association* and the *Poor-Law Commissioners*. Dr. WEBSTER's judicious and able letter, with the answer—which is at least written in a conciliatory spirit—will be found in another page.

THE CONCOURS.—After a long and ably-contested concours, M. Piorry has been chosen Professor of Pathology, in the chair recently vacant, at the Faculty of Medicine, Paris, by the death of M. Broussais. M. Piorry owes his election to the casting-voice of the President.

WESTMINSTER MEDICAL SOCIETY.

Saturday, March 7, 1840.

Mr. Streeter, President.

Mr. Rutherford Alcock read a paper

ON SOME OF THE MORE REMARKABLE EFFECTS AND THE DIAGNOSTIC SIGNS OF CONCUSSION.

After some general remarks on the difficulty of diagnosis of cerebral injuries, and the various causes influencing the effects, Mr. Alcock proceeded to lay before the Society some of the results of long-continued observation, originally commenced whilst in charge of large hospitals in the late civil wars of Portugal and Spain, and continued up to the present time with increasing interest.

The comprehensiveness of the subject of cerebral and spinal injuries and diseases, had induced him to confine the subject of the present paper, as much as possible, to one form alone, merely glancing at its bearing and relation to the other elementary forms of morbid derangement. These elementary forms, after long and patient analysis of a vast number of cases, he had convinced himself might be reduced to four—concussion, compression, laceration, and ramolissement. The first the most important, and often, in its effects, including the other three. A short analysis of the differences in the nature of these forms, and the mode in which the symptoms of one alone frequently predominated, although several might be co-existent, showed a source of peculiar difficulty in the diagnosis.

Concussion the most subtle, and all-pervading of the elementary forms—so termed, probably from *concutio*, to shake together—the author thought very inadequately expressed the true nature of cerebral concussion, which he considered to be an essentially vibratory shock or jar, whether produced by a direct blow or fall on the skull, or through any other part of the frame, mattered little; its essential character was vibratory, and this was a chief element of its great, often disorganising and universally pervading power. From many experiments on matter, particularly animal compounds, he believed there was a force in vibration not described among the mechanical powers, yet endowed with equal or greater power. Perhaps it might not be all mechanical, but a means of generating a chemical or electric power, the action of which, when in excess, was decomposing or disorganising. No one could closely observe the multiplied effects of concussion, and analyse their character, without feeling how well such an hypothesis explained the peculiar and various phenomena as shown in the symptoms during life, and occasionally marked in the changes of structure observed after death.

Concussion was different from all other cerebral injuries. It alone was capable of enchaining with links of palsy every fibre, destroying function, and extinguishing life, leaving no trace in structure, no morbid change of fibre, recognisable by our means of investigation. Passion, emotions of the mind alone, were capable of producing similar results. The author defined concussion to be "any vibratory shock or jar taking effect on the brain, whether caused by direct violence on the head, or indirectly, through any other part of the frame, producing lesion of cerebral function or of structure, or of both." There might be lesion of cerebral function alone, slight or severe, temporary or permanent, or the lesion might be structural in the like manner, varying in degree and duration; an evident cause for great variety in the effects, independent of the combination of concussion with compression, laceration, or softening. The effects of any one of the elementary forms defined (but especially did the observation apply to concussion) were numerous, and varied both in character, degree, and though less frequently, in order of succession; and this even when there was no complexity by the combination of one or more forms. Hence the contradictory opinions and the manifold discrepancies observed in the various descriptions of the distinguishing signs of each. In order to make the description of concussion coherent and intelligible when carried to the bedside for the purpose of testing its accuracy, it was absolutely necessary to define broadly and clearly certain stages. It was equally necessary to define upon ascertained principles the degree. Various degrees presented their stages in such different forms that the description of one would in no way serve for another; nay, on comparison, they might almost be mistaken for distinct or different diseases. Herein lay one great cause of confusion and contradictory opinions. Mr. Abernethy, of whom he spoke with the high respect due to his great talents, probably felt in some sense this necessity, for he described concussion in stages; but unfortunately, he lost sight of the equally imperative necessity of defining and describing the stages in reference to a certain fixed scale of degrees, without which there was impossibility of accurately comparing data, and constant contradictions and discrepancies had continued to be the result of the observation and labours of surgeons in reference to this inquiry. By reference to the physiology of the nervous system, he hoped to demonstrate that a basis for the classification of degrees existed; he would lay down two axioms:—

1st. The effects which ensued from cerebral injuries, and consequently the symptoms, are according to the kind of injury, the degree, and the stage. 2ndly. These effects and symptoms are manifested through the three different, and, to a certain ex-

tent, distinct nervous centres and systems, viz.—

The Cerebral.—Centre the brain, but extending by its sensory and motory columns down the spine; the seat of judgment and perception furnishing the special senses directly influencing motion and sensation. The source of all voluntary motion—

The Ganglionic.—Centre the ganglia; the sympathetic, the secretory, and nutritious systems, contributing largely to bind the cerebral and true spinal together, and both to it by the interlacement of sensitive, motor, and secretory filaments.

The True Spinal.—Its axis in the spine and medulla oblongata, prolonged into the cerebral structure, connected with the involuntary motions of the viscera, with the muscles guarding the orifices of the body for ingesta and egesta, and influencing motions of the irides.

By reference to these three systems alone could the diagnostic signs of a cerebral injury be estimated, or accurately classified into its degree and state.

There are three well-marked stages, as there are three degrees distinguished by the implication of the above divisions of the nervous system; the last degree involving all three, the second the two first. The three stages were, first, one of depressed action; second, of exalted action; the third having for its distinguishing feature irritability of cerebral fibre, giving increased susceptibility to impressions, whether mental or physical, all acting as deleterious stimuli to the brain.

The principles laid down seemed calculated, if correct, and they had been maturely weighed and tested at the bedside, to produce important changes in our modes of diagnosis in these injuries, and to explain many apparent contradictions in the opinions delivered by experienced surgeons. To show that while the observations might be correct, they were converted into sources of error by being referred, not to the previous systems influencing, but to the original injury of the brain, and thus created into types of a kind of cerebral lesion, instead of a degree or stage, reference was made to the symptom of stertorous breathing, which was not a sign of compression, as generally taught, but common to all the elementary forms, merely indicating the implication of the true spinal system, its impaired power allowing the epiglottis to fall over the glottis, instead of keeping it widely open. So of dilatation of the pupil, said to be dilated in concussion, contracted in compression. Both these states might, and generally did, occur in different stages in all the elementary forms. This error occurred from not referring to the true causes of motor influences in the irides. These come under the same classification as sphincter muscles, partly voluntary, chiefly involuntary. Time would not allow him more than the enumeration of certain conclusions drawn from pathological considerations.

The general effect in all severe cerebral injuries in the first stage, is to impair cerebral power, and with it that of the optic tract. The loss of sensibility in the retina gives the dilated pupil at once as an effect and a sign of impaired power.

2. The general effect in the second stage is to stimulate the cerebral fibre giving increased susceptibility to impressions; the natural consequence is contracted pupil by the reflex action, and this forms an important indication that the second or inflammatory stage is supervening.

3. If there be want of consent between the two pupils, it indicates internal mischief, and this in motory, not sensory, tracts of nerves; and also, any limited or local irritation in the sensory tract would give contracted pupils, although there might be a co-existent general impaired power. Thus far, he believed, the pupils might be taken as guides in injuries of the head, but in that sense only, and not as distinctive signs of concussion, compression, or any one form, which they never were. Differences in degree of torpor defined as distinctions between compression and concussion were equally fallacious. That concussion produced an irritability of fibre, rendering the brain morbidly sensitive to all stimuli, and that it was by far the most common and undeviating effect, admitted of demonstration; several well-marked cases were given, showing this irritability developed in various degrees. In consequence of this irritability remaining, often for years or life, if a second blow or concussion was received at any future period, it was liable to act as a stimulus and produce the most ungovernable excitement, not inflammation, but a state analogous to delirium cum tremore; and if this were mistaken for inflammation, and the patient bled, the excitement would increase, and the patient die. He required to be under the full influence of morphine.

In illustration of this, a case was related by the author. One of the most important facts which he wished to draw the attention of the Society to, was the frequent occurrence of a secondary coma, coming on some time after the first shock had subsided—hours or days—sometimes without a first occurring, usually taken as a certain sign of compression, by effusion, extravasation, &c. This impression could be proved, by a great number of cases, to be erroneous; it was much more generally a similar effect depending not on the pressure of only a normal quantity of blood within the blood-vessels, but upon a debilitated and morbidly susceptible cerebral fibre, and would yield promptly and permanently to bleeding. Its analogy to secondary asphyxia, after drowning, &c., by which patients frequently died

after a seeming recovery from the first, was striking.

Concussion, occasionally, did not follow the course marked out, and then, generally, it ended fatally in one of the following ways:—

1. By destruction of cerebral function alone;
2. By disorganization of structure;
3. By ramollissement;
4. By dispersed effects developing a fatal suppurative action in some distant structure or organ.

With respect to these terminations, time only allowed him to give a case illustrative of the first, and, perhaps, most startling conclusion; but he had found the accuracy of these amply borne out by analogy, with the effects of concussion on the globe of the eye.

In answer to a question, Mr. Alcock said that the chief distinctions between irritable cerebral fibre, and inflammation of the brain or its membranes, might be briefly stated to consist in the character of the pain, the degree of influence of light, and contraction of the pupils, and the character of the pulse. In irritability, the pain was not of that darting and excruciating character, although the patient, probably, complained more of it; the intolerance of light was not excessive, and instead of the contraction of the pupils to a fine point, as in inflammation, the contraction was more moderate. With even the pain of irritability, there was more tendency to drowsiness and giddiness, particularly at intervals. The pulse did not present that small, thready, and concentrated pulse common to inflammations in vital organs. It gave the impression of irritability by a fulness, unsteady, and somewhat jerking stroke, varying as to its hardness or softness, occasionally both full and hard, but very rarely the latter.

The discussion was adjourned.

BRITISH MEDICAL ASSOCIATION.

Exeter Hall, March 3, 1840.

Dr. WEBSTER, President, in the Chair.

THE Secretary laid on the table "The Report of the North of England Medical Association, on the present State of Medical Reform," accompanied by the "Memorial of the Council of the North of England Medical Association."

A letter was read from J. P. Glen, Esq., Secretary to the Glasgow Medical Association, containing several suggestions on the "Outlines" of the British Medical Association, which the former Association has reprinted, having been approved and adopted at a general meeting, together with their suggestions respecting two or three clauses of the "Outlines."

A letter was read from Brighton, requesting the form of a Petition to Parliament for the redress of Medical grievances, and requiring the necessary instruction as to the formation of a branch association in that town and neighbourhood.

The President read two letters from Dr. Maunsell, of Dublin, on the subject of Medical Reform.

Some members present, wishing to have the correspondence between the Marquis of Normanby (respecting his lordship's remarks on presenting the Petition of the British Medical Association to the House of Lords) and Dr. Webster, the President, published in full, we here insert it:—

"Hill-street, Thursday Evening,
"Feb., 20, 1840.

"SIR:—When I agreed, at your request, to present the Petition from the British Medical Association, which, but for Lord Durham's illness, would have been placed in his hands, I understood that the prayer was general, the object being to direct public attention to the importance of the subject. On reading the Petition this day, before presenting it, I observed that it prayed that House to take immediate legislative measures for the establishment of a Central Elective Medical Board; I felt bound, therefore, to state that I could not concur in its prayer, and the rather that, in the last interview I had with you and a Deputation, I stated that I thought it right to suspend all opinion as to the extent of the evil, or the nature of the remedy, until the result of that farther inquiry should be known, notice of which had been given in the other House of Parliament. I have the honour to be, Sir, your most obedient servant,
"NORMANBY.

"To Dr. Webster, Dulwich."

"Dulwich, Feb. 22, 1840

"MY LORD:—I had the honour of receiving this morning your communication of the 20th instant, and regret that any misunderstanding should have arisen in your lordship's mind as to the prayer of the Petition of the British Medical Association.

"Your lordship will, no doubt, remember, that when I asked you to present the Petition (and also subsequently by letter), I mentioned that the Council could not expect you to pledge yourself to its prayer, after the statements which you had made to the two Deputations, viz., at the first (in substance), as follows:—

"'That you supposed that we did not expect you to give any opinion on subjects which had not been before brought under your notice, but that you would consult your colleagues, and again see the Deputation.'

"At the 2nd, 'That after consulting your colleagues you had communicated with Mr. Warburton, who had engaged immediately to publish the rest of the evidence taken before the Parliamentary Committee in 1834; that he would then move for a fresh Committee to consider the state of Medical Affairs, and that the Government would naturally refrain from giving any opinion, until the result of the Committee's proceedings was known.'

"At your lordship's request a copy of the Petition was sent to the Home-office, by our Secretary, for your perusal, in addition to the 'Outlines of a Plan of Medical Reform,' which I had the honour of forwarding, and which I take the liberty of mentioning, to show that there was no wish to take your lordship by surprise.

"From what fell from your lordship at the Deputations, all that the Council looked for was, that in presenting their Petition your lordship would have noticed *the importance of the subject, in connection with the public health*, and (perhaps) that *some measure* of Medical Reform would be required. If the reason assigned in your letter to me for not concurring in the prayer of the Petition had appeared in connection with its presentation, it would have been highly satisfactory to the Association, and prevented doubts and misapprehensions which may arise in the minds of Medical Reformers from the abrupt announcement in the newspapers.

"As your lordship has politely deemed it necessary to address me on the subject, I have thought it but proper to set myself and the Council of the Association right with your lordship. I have the honour to remain, my Lord, your Lordship's obedient, faithful servant,

"GEO. WEBSTER.

"To the Most Noble the Marquis of Normanby, Secretary of State, Home Department."

The Deputation appointed to wait on the Solicitor-General, Sir THOMAS WYLDE, M.P., reported to the Council, that they had waited upon Sir Thomas last week by appointment, and had been very kindly received. He promised to present the Petition, and stated that he would attend to the subject of Medical Reform, and make himself acquainted with its bearings. He would willingly receive any papers, or any facts, from the Association, connected with the question; and, if it was desired, would again confer with the Deputation. He could say at once that with so much of the sentiments of Medical Reformers as led them to demand such a reform of the medical corporations as would be analagous to the reform of the municipal corporations, he could agree. It was his opinion that all governing bodies existed for the advantage of the members at large, to whom they should be responsible.

The Deputation considered that they had gained an important step, and that the Association was much indebted to Sir Thomas Wylde for the promise he had liberally made, to make himself master of the subject of Medical Reform. It was the well-known character of the Solicitor-General to enter fully into every case which he undertook; and the Deputation anticipated the best results from the application of his sagacious mind to questions of such importance to the public health and to Medical practitioners, as the education, government, and legal organisation of the Profession.

Many of the present evils and grievances were the direct effect of abused charters, and unjust laws, passed in bygone ages, by Parliaments unenlightened either by experience, science, or the recent progress of legislation and political economy.

The Deputation expressed a confident hope that the Solicitor-General, Mr. Wakley, M.P., and Mr. Warburton, M.P., would succeed at least in obtaining for the Medical Profession the just rights and privileges enjoyed by the members of other corporations; and which could not fail to promote the progress of the healing art, and to prove beneficial to mankind. They desired no monopoly; but that the gates of the Profession and its highest places should be thrown liberally open to every person of merit, who possessed the fair claims of talent, industry, and good character, and had established those claims by having submitted himself to well-devised public examinations.

In the course of the evening Mr. R. STEVENS read a paper on Medical grievances, of which previous notice had been given.

The meeting, at a late hour, adjourned until Tuesday, March 17.

ERRATA.—NOTE FROM THE SECRETARY.

To the Editor of THE LANCET.

SIR:—I am directed by the Council of the British Medical Association to request you to correct, in the form of an erratum, the 1st clause of the model of a Petition, which appeared on the 22nd instant, by omitting the word "well," as chemists, &c., are not qualified at all.

Also, have the goodness to make a memorandum, that the letter of H. Cooper, Esq., of Hull, mentioned in last week's LANCET, was not on the subject of the medical department of the Poor-Law Amendment Act, but on the subject of petitioning Parliament for some measure of Medical Reform. I am, Sir, your obedient servant,

C. W. ROGERS HARRISON,
Hon. Sec.

MEDICAL RELIEF IN UNIONS.

To the Poor-Law Commissioners for England and Wales.

GENTLEMEN:—In the month of March, last year, I had the honour of waiting upon you with two Deputations from the Council of the British Medical Association, on the subject of Poor-Law Medical Guardians. You were then pleased to submit to the Council a Document of Inquiries well calculated to elicit important information on the subject, which you invited the Council to report upon, and also to lay before you their plans respecting Medical attendance on the Poor.

Accordingly, the Council having collected from various sources information in answer to the queries in the document alluded to, reported thereon, and, at the same time, laid before you two plans for an amended system of Medical *Relief*, founded upon principles which they believed would be just to the Sick Poor, to the Profession, and to the public, embodying (and enlarging from further experience) the recommendations made by themselves and other witnesses examined before a Select Committee of the House of Commons in 1838.

The working of these plans was fully explained in an interview at which you patiently listened to the various details, and on forwarding to you copies of the different documents, I received an official reply, acknowledging their receipt, and stating that the Commissioners desired to express their sense of the candid and satisfactory manner in which the views of the British Medical Association had been brought under their notice by the Deputations which they have lately had the honour of receiving, and that they would give to the suggestions of the Association their most attentive consideration.

I subsequently received from the Commissioners a "Minute," dated June 4, 1839, containing several important alterations as to the mode of attendance, the classification of paupers, the introduction of the payment-per-case plan, an increased amount of remuneration, and separate payment for midwifery and surgical operations of a serious character. This Minute, so far as it went into the grievances complained of, was calculated to give great satisfaction to the Association and to the Profession generally, and indicated a desire on the part of the Commissioners to meet the just demands of the Poor-Law Medical officers. It was understood by the Deputation that any alterations then contemplated could not be conveniently carried out until the commencement of another parochial year, viz., at Ladyday, 1840, when they were to come into operation.

I am induced again to trouble you, at the request of the Council of the Association, in consequence of their having received from many parts of the country letters, complaining that no alterations have been effected, or seem to be contemplated, by the Boards of Guardians; that the mode of remuneration is not altered; that the payment per case has not been adopted, the salary per union, parish, or district being continued; that separate charges for midwifery and operations, &c., are not allowed; that the degrading system of bargain by "Tender" is still continued, and strangers thereby invited to interfere with the resident practitioners; and that the districts, as hitherto, are dangerously extensive for the Sick Poor, and inconveniently large for the Medical Officers. Some gentlemen, also, complain much of the very onerous weekly and other returns required by the Commissioners, without any additional remuneration.

I therefore respectfully beg to call your serious attention to these circumstances, and to the uncertainty which still exists as to the future Poor-Law Medical arrangements, and to inquire whether it be the intention of the Commissioners to carry out fully the alterations indicated in their "Minute;" whether such alterations have in any cases been effected, and if any farther changes in the present system be contemplated.

Believing, from the pains you took with the Deputations alluded to, and from the interest you then displayed in the subject, that you are really desirous of perfecting the present faulty system of Medical Relief, the British Medical Association have not hitherto considered it necessary to join in promoting a Bill which Mr. Serjeant Talfourd has been requested to bring into Parliament, to force upon the Commissioners those alterations which, I trust, their own feelings towards the Sick Poor, and their sense of justice towards the Medical Profession, will induce them to adopt as speedily as circumstances will permit.

If you should consider an interview more desirable than writing, a small Deputation would, with much pleasure, wait upon you; but an early answer will much oblige. Hoping that the importance of the subject will prove my apology for again addressing you on behalf of the Association with which I am connected, I have the honour to be, Gentlemen, your obedient, faithful servant,

GEORGE WEBSTER.

Dulwich, March 2, 1840.

SIR:—The Poor-Law Commissioners acknowledge the receipt of your letter of the 2nd instant, in which you draw their attention to the communications which the Commissioners had, in the month of March, last year, with two Deputations from the Council of the British Medical Association, on the

subject of the arrangement for Medical Relief in the Poor-Law Unions.

The Commissioners desire to inform you, in reply, that they have recently reported very fully to the Marquis of Normanby, the principal Secretary of State for the Home Department, on the subject alluded to, and that their Report will shortly be laid before Parliament, and made public. The Commissioners have abstained from issuing any general regulations on the subject of Medical Relief, until their Report shall have been presented to Parliament.

They will be glad, when the Council of the British Medical Association have had the opportunity of perusing their Report, to be favoured by any observations or suggestions upon it which the Council may think it desirable to communicate to them.

Signed, by order of the Board,
E. CHADWICK, Secretary.

Poor-Law Commission-office,
Somerset-house, March 9, 1840.

George Webster, Esq., M.D., Dulwich.

UNIVERSITY COLLEGE HOSPITAL.

FEMORAL HERNIA. OPERATION. ARTIFICIAL ANUS.

M. S., aged 67, was admitted Nov. 9, 1839, at half-past 12, P. M. She is a washerwoman, and states that she has had vomiting and pain in the abdomen since yesterday morning, when she first noticed a swelling in the right groin.

On examination, a small tumour, about the size of a pigeon's egg, was found about midway between the anterior superior spinous process of the ilium, and the symphysis pubis, and below Poupart's ligament. It was tense and hard, with a little redness of the skin, and acute pain on pressure. Pulse 90, weak; some coldness of the hands and feet. The taxis was employed without producing any effect upon the tumour; the patient was then put into a warm bath, and during the faintness that came on, the taxis was again had recourse to, but without success.

At a quarter to 2 Mr. Quain proceeded to operate. The integuments having been raised into a transverse fold, an incision was made down to its base, so as to extend from the middle of Poupart's ligament downwards and outwards, over the tumour, through the skin, superficial fascia, and fat, of which there was some quantity. The adipose and cellular tissue having been divided, the fascia propria came into view; this was opened on a director. The sac, which was remarkably thin and transparent, and closely embraced a very dark portion of small intestine, was opened in the usual way, when a small quantity of dark-coloured fluid issued. The intestine, though in some places black, retained its smooth shining appearance and natural consistence, and had no fetid cadaverous smell. The stricture, which was very close, was then divided upwards and inwards, and the bowel reduced. The wound was then closed with a suture.

6th, P. M.—Has much pain in the abdomen. Pulse 58, and weak; no vomiting or hiccough; and skin warm and moist. An enema was administered, which operated in half an hour. Wound dressed with isinglass plaster.

10th.—Pulse 66; no tenderness of the abdomen; wound dressed with water dressing, and suture removed. Had a good night. Bowels opened twice.

12th.—Continued to go on very favourably; bowels opened twice yesterday. Some redness about the wound; tongue white; but in other respects the patient's condition is highly promising.

The patient went on very favourably until the 15th, when, on removing the poultice which had been applied to the wound in consequence of some slight inflammation which existed around it, a small quantity of fæcal matter was perceived on the dressings; it was of a yellowish brown colour, thin, and of a sour smell. There have been no symptoms of peritonitis, and her bowels have not been opened since the day before yesterday.

19th.—No discharge of fæcal matter since last report. Her bowels have not been opened since the 16th. No pain in the abdomen. A dose of castor oil and an enema were ordered.

December 1st.—A small quantity of fæcal matter was again discharged, the wound having been left open.

2nd.—The discharge has very much increased in quantity; it is thin, of a yellowish brown colour, and has a sour smell. The opening through which it is discharged, is about the size of a fourpenny piece.

26th.—The discharge from the wound has diminished in quantity. She has had a motion per anum.

27 h.—Discharge still diminishing. Another motion per anum.

The discharge from the wound diminished gradually until the 1st of January, when it ceased entirely; a compress was then applied to the opening, which appeared to be closing up.

January 5.—Only a small fistula left, from which a drop or two of pus is discharged in the course of the day. This opening was soon healed by compression and stimulation with the nitrate of silver. She was discharged, cured, on the 17th.

MEDICINE IN THE HOUSE OF COMMONS.

"At last Mr. Sheriff Evans is provided with a disorder. On Monday, Lord Mahon stated that Mr. Sheriff Evans was suffering from a liver complaint, and that his life would be endangered from further confinement. This representation his Lordship made on the authority of the medical attendant of the Sheriff, whose name, very appropriately to the occasion, is Freeman.

"Mr. Freeman was called in, and his evidence amounted to this: that Mr. Evans had a disordered liver, but there was so little urgency in the case that no other medical adviser had been called in; that as for air and exercise, such opportunity as the Sheriff was allowed of taking both he did not avail himself of because of the east wind, which, as we imagine, blows as keenly on persons at liberty as on those in duresse under the authority of the House of Commons.

"'Do you think (asked Mr. Elliot) that if Mr. Sheriff Evans were allowed to take air and exercise, and then to return to the House of Commons, that would answer his purpose?—*I think not, for his mind is suffering.* (A laugh, and cries of 'Hear, hear,' and 'Order.')

"This question touched closely upon the object of the sick and suffering Sheriff, who will not be content to return to the House after air and exercise, and will be satisfied with nothing short of being returned to it. For it appears that the gentleman dying of a liver complaint was at that very instant a candidate for the borough of Lewes, and if his confinement was bad for his liver, it was, as his friends said, good for his electioneering interests.

"The very day on which Mr. Freeman, the surgeon, was making such a piteous representation of the state of Mr. Evans, the worthy gentleman was putting forth his claims for a trust, the duties of which require no small portion of health and vigour.

"Parents are often heard, in considering the destination of their children, to express fears that they are not strong enough for certain vocations; but if the doctrine which we see gaining ground obtains much more head, a wonderful field will be opened for pursuits of profit or pleasure against the law by persons having the advantage of bad health, and projects of this sort will be common—

"'Willy's health is so feeble that I shall bring him up for sedition; he will have a fine field in the anti-poor law agitation without any fear of imprisonment; John's neck is so short that I hope to see him a Sheriff, and intend him to be an attorney in the anti-privilege line of business, which, with his configuration, he must prosecute without any danger of incarceration by the House of Commons. Harry is of so very delicate a constitution that I am almost tempted to make a thief of him, for there is nothing he could not do with impunity, as sentence of imprisonment would obviously be sentence of death to him. The dear fellow would be sure of every indulgence in felony.'

"On Wednesday Lord Mahon moved that Dr. Chambers, who had visited the Sheriff, should be called to the bar of the House and examined. A fine example of the differences between doctors followed.

"Mr. Freeman had asserted most positively that the Sheriff never had the gout.—Dr. Chambers stated that he had recently had a fit of the gout. The Doctor's account of Mr. Evans was as follows:—

"'He is obviously labouring under ill health. His appearance shows it. I conceive his ill health to arise from the imperfect state of his digestive organs. He is of an unhealthy aspect of body. He is bilious-looking and gouty. I understand he has suffered from a severe fit of the gout recently.'

"As to the effect of prolonged confinement, the Doctor spoke thus oracularly—

"'Do you consider that his life will be endangered by further confinement?—I think his health will be much deteriorated by his confinement. I conceive that further confinement might convert the present disorder, or defect of his digestive organs, into absolute disease. For instance, if indigestion is continued for a length of time, the liver becomes disordered, and when the defect of digestion is continued, the disorder becomes disease, which we know *may* lead to dropsy, and all the dangers of dropsy.'

"In an affair of this kind a physician always treats the case as seriously as possible, and supposes every possible bad turn of it, and Dr. Chambers, with his *ifs* and his *mays*, has made the most of it. In a second examination he made some statements which we are tempted to transcribe. They are such as would have occurred to Molière, if he had imagined a scene of the kind.

"'Will you incur the responsibility of saying that a further confinement for six weeks longer, or for a shorter period, will produce disease?—I cannot fix the time as to when disease may be produced. *I do not like to incur the responsibility of saying that confinement for a longer time will produce disease.*'

"This is prudent; what follows is confident and bold—

'Do you think it necessary, in reference to the present state of Mr. Sheriff Evans, that some relaxation of his close confinement should be immediately had?—I doubt

whether *anything short of absolute freedom would place him in the condition which he should want.*'

"This is the sort of logic of which fortune-tellers make use. As the Sheriff wants his freedom, nothing short of his freedom will place him in the condition he wants. The reasoning may be carried a step further; as the Sheriff wants to sit for Lewes, nothing short of sitting for Lewes will place him in the condition which he wants.

"Here is another profound answer—

"'Did you find the room in which he is confined one that would materially interfere with his health?—That, and a crowd of persons being in it, might interfere with his health.'

"Dr. Chambers might have said more—he might have said that *if* the room in which the Sheriff is confined were as much crowded as the Black Hole in Calcutta, the Sheriff would be in imminent danger of suffocation. If the Sheriff chooses to receive a throng of persons in his chamber, whose fault is that? The detriment to his health is the price which he pays for the vulgar *éclat* for which he is acting.

"A sensible physician in this case would have prescribed a draft for £600.

"If Mr. Evans's health or his life be in any danger, he is voluntarily endangering his own health and life. He has only to purge himself of his contempt, and to obtain his liberty."—*Examiner*, March 8.

NOTE FROM MR. WANSBROUGH.

To the Editor of THE LANCET.

SIR:—In answer to your query, "What is to prevent the first applicant for my recipe from publishing it in your columns?" permit me to reply, in one line: "*Honour*, sole judge and umpire of itself," as Home so beautifully distinguishes it; unless, indeed, Falstaff's description have obtained, to the disgrace of a "*liberal* and *honourable* profession!" It is true I have no guarantee against my remedy falling into the hands of empirics than the *implied honour* of my professional brethren, to whom I give it; and, surely, the dissemination of it among them will be a sufficient extension of its "advantages," without the necessity of general publicity. I cannot for a moment entertain the idea that confidence *so placed* will be *betrayed*, even in these degenerate days. *I* have a better opinion of the members of our Profession; and, as such strenuous measures are now in progress for the suppression of quackery, I hope that my *intentions* against the general publicity of my "recipe" will be aided by those gentlemen who may possess it; for myself, I feel that I am acting under the influence of the *mens sibi conscia recti*. I am, Sir, your obedient servant,

T. W. WANSBROUGH.

King's-road, March 11, 1840.

*** We publish the letter of Mr. Wansbrough, who is too well known for good and honourable feelings to be suspected of the wilfully wrong impulses of secresy; but we do not assent to the propriety of his course, having once announced his professed discovery. Indeed, had his first note been that of a stranger, it would not have been inserted.

DEATH OCCASIONED BY EXHALATIONS FROM THE DEAD BODY.

A TOMB had been constructed for the family M—— in the Eastern Cemetery, and four bodies had been placed in it, when it was discovered that water had penetrated into the tomb. The first body had been interred in Feb., 1836, and the last in April, 1839.

On the 2nd July, 1839, two sextons undertook to remove the water and the dead bodies. From the commencement they were struck by the fetid odour which exhaled from the water, but continued to work. They had already removed a large quantity of water and two coffins, when, in attempting to seize the third, their feet slipped, and the remainder of the fluid was violently agitated by their fall. One of the men immediately fell lifeless; his comrade made several attempts to raise him, but on the third effort also fell, deprived of consciousness, upon the body of his fellow-labourer. Assistance soon arrived, and the men were withdrawn from the tomb. The first was dead, the second recovered; but for a month afterwards he suffered from considerable difficulty of breathing, and weakness of the legs.

It is evident (says the reporter, M. Guerard,) that the accident was produced by the fetid exhalations from the bodies, mixed with the water.—*Annal. D'Hygiene, &c.*, Jan. 1840.

OBITUARY.—M. Biett, one of the physicians of the Hospital of St. Louis, and well known for his researches on diseases of the skin, is dead. M. Hippolyte Cloquet has, also, fallen a victim to an attack of apoplexy.

CORRESPONDENTS.

The points which are treated of in *Mr. Stevens's* paper have, also, been frequently discussed in our Journal.